

ALABAMA BY-PRODUCTS CORPORATION
DIAMOND DRILL HOLE 1706-39

LOCATION: SE-SW of section 4, Township 17 South, Range 6 West

RECORD BY: Arthur J. Blair
DATE: November, 1952

	THICKNESS	DEPTH	ELEVATION
	Ft. In.	Ft. In.	
Surface	10 3	10 3	329.57
Sandy shale	19 9	30 0	
Shale	26 6	56 6	
Shale, S.S. bands	1 6	58 0	
Shale	14 0	72 0	
Dark shale	1 3	73 3	
Fossil bed at 73' 0"			
Shale. Thin S.S.	2 7	75 10	219.67
COAL	0 3	76 1	
Black shale	0 4	76 5	
Fireclay - Hard	1 9	78 2	
COAL	0 12	78 3	
Shale	0 3	78 3	
COAL	0 14	78 3	
Shale	0 14	78 3	
Fireclay	0 2	78 1/4	
Shale	2 2	81 1/4	
COAL	2 5	81 1/2	
Sandy shale	0 6	81 1/4	
Sandstones (coarse) (vertical split at 103')	19 6	107 7	
Shale	0 9	108 4	
COAL. Fire clay	0 11	109 3	
Fire clay	0 8	111 11	
Sandy shale	2 5	117 2	
Sandstone. Shale bands	0 3	121 3	
Sandstone. Medium gr.	0 1	131 1	
Shale. Thin S.S. bands	0 1	137 1	
Sandy shale	0 7	143 6	
COAL	1 2	144 10	
Hard shale	0 2	145 0	
COAL. Bone streak	0 4	145 1/2	
Shale	0 2	145 6	
COAL	0 8	146 2	
Shale. Bone streaks) AMERICAN SEAM	0 14	146 6-3/4	
COAL	0 7	147 2	
Shale	0 12	147 3-1/2	
COAL	0 3/4	147 4-1/4	
Shale. Hard	0 3/2	147 7-3/4	
COAL (Lower 3" bony streaks)	0 11	148 6-3/4	
Hard sandy fire clay	1 8	150 2-3/4	

NOTE: Hole tight. Water standing in hole.

JOY MANUFACTURING COMPANY

FORM #20

MICHIGAN CITY, INDIANA

#170-642

REPORT OF DIAMOND DRILL PROSPECTING

Work done for Alabama By-Products CorporationNear Maxine, AlabamaYear 1952

Name of Contract

Prospect No. 170-642

DATE	FEET FROM SURFACE		Thickness Specs	MATERIAL	SURF. EL. 469.46
	From	To			
	0	17"	17"	Surface	
	17"	42'11"	25'11"	Sandstone	
	42'11"	93"	50'1"	Sandy Shale	
	93"	134"	41"	Sandy Shale w/ Sandstone bands	
	134"	185"	51"	Shale	
	185"	194"	9"	Shale w/ Sandstone bands	
	194"	202"	8"	Shale	
	202	203'6"	1'6"	Shale w/ Sandstone bands	
	203'6"	211"	7'6"	Shale	
	211"	212'7"	1'7"	Fossil Bed & Sandstone	
	212'7"	216'8"	4'1"	Shale Sandstone bands	
	216'8"	217"	4"	Coal	
	217"	217'2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	Parting	
	217'2 $\frac{1}{2}$ "	217'4"	1 $\frac{1}{2}$ "	Coal	
	217'4"	218'5 $\frac{1}{2}$ "	1'1 $\frac{1}{2}$ "	Fire Clay	
	218'5 $\frac{1}{2}$ "	218'8 $\frac{1}{2}$ "	3"	Coal	
	218'8 $\frac{1}{2}$ "	218'10 3/4"	2 1/4"	Shale w/ Coal bands	
	218'10 3/4"	218'11 $\frac{1}{2}$ "	3/4"	Coal	
	218'11 $\frac{1}{2}$ "	218'11 3/4"	1/4"	Parting	
	218'11 3/4"	219'2 $\frac{1}{2}$ "	2 3/4"	Coal	
	219'2 $\frac{1}{2}$ "	222'6"	3'3 $\frac{1}{2}$ "	Hard Sandy Fire Clay	
	222'6"	225'10"	3'4"	Sandy Shale	

(continued)

JOY MANUFACTURING COMPANY

FORM #20

MICHIGAN CITY, INDIANA

170642

Page 2

REPORT OF DIAMOND DRILL PROSPECTING

Work done for Alabama By-Products CorporationNear Maxine, Alabama Year 1952Name of Contract Prospect No. 170-642

DATE	FEET FROM SURFACE		Thickness Strata	MATERIAL
	From	To		
	225' 10"	225' 11"	1"	Coal
	225' 11"	229' 9"	3' 10"	Sandy Shale
	229' 9"	230' 2"	5"	Coal
	230' 2"	233' 2"	3"	Fire Clay
	233' 2"	240' 6"	7' 4"	Shale
	240' 6"	241' 7"	1' 1"	Coal - N
	241' 7"	243'	1' 5"	Fire Clay
	243'	251'	1' 5"	Sandy Shale
	251'	266'	15'	Sandstone
	266'	276' 3"	10' 3"	Sandy Shale
	276' 3"	277' 7"	1' 4"	Coal
	277' 7"	277' 8"	1"	Bony Parting
	277' 8"	278' 8"	1"	Coal
	278' 8"	278' 9 1/2"	1 1/2"	Bony Parting
	278' 9 1/2"	279' 5"	7 1/2"	Coal
	279' 5"	279' 7 1/2"	2 1/2"	Shale Parting
	279' 7 1/2"	279' 10"	2 1/2"	Bony Coal
	279' 10"	281'	1' 2"	Coal
	281'	283'	2"	Hard Sandy Fire Clay
	283'	284' 5"	1' 5"	Sandy Shale
	284' 5"	284' 7"	2"	Rashy Shale
	284' 7"	286'	1' 5"	Shale

cc: Mr. Sheriff
Mr. Burdette
Mr. Cook
Mr. Gilbert
Mr. Walker
Mr. F. McDuff
Mr. Darden

February 18, 1983

MEMORANDUM

TO: MR. MUSICK
FROM: ✓ MOYER EDWARDS *M.E.*
SUBJECT: MAXINE ROCK DUMP PROJECT

Fax copy

Per our conversation I have met with Mr. Charles Horn of the Alabama Department of Environmental Management to discuss the proposed drainage from the Maxine Refuse Area which is to be reclaimed.

After reviewing the print which you sent to me, Mr. Horn expressed concerns about the following:

1. Rainwater from the undisturbed areas west of the existing refuse area entering the proposed new diversion ditch which is to be excavated.
2. Drainage from the area which is to be reclaimed.

In regards to the first item, I assured Mr. Horn that, based upon my conversations with you, the area west of the new diversion ditch will be so contoured and proper action taken to assure that no waters from the undisturbed areas will co-mingle with waters draining from the old refuse area.

Drainage from the area to be reclaimed - Mr. Horn's concern in regard to this item is siltation, especially until the ground cover is established, since water from this area is drained into a ditch which will be carrying it straight to the river.

I pointed out to Mr. Horn that these waters for the most part would be drained into an existing small basin located in the hollow just southwest of the area to be reclaimed. I also indicated that ABC would take such action as necessary to minimize any siltation to the river from this reclaimed area.

In regards to the crossovers and based upon my conversations with the Alabama Department of Environmental Management personnel, it is my opinion that NPDES permitting of these crossovers is not warranted.

If you have any questions in this regard please do not hesitate to call.

MBE:r1

Mr. Edwards
ALABAMA BY-PRODUCTS CORPORATION

FOUNDRY COKE • COAL • COAL CHEMICALS



THOMAS E. MUSICK
CHIEF MINING ENGINEER

COAL DIVISION OFFICE
P. O. BOX 218
OODSPRING, ALABAMA 35560

PHONE (205) 252-8342
TELEX NO. 59-810

February 25, 1983

Mr. Randall Johnson
State of Alabama
Surface Mining Commission
Post Office Box 2398
Jasper, Alabama 35501

Re: Maxine Mine - Permit Application

Dear Mr. Johnson:

Attached you will find four (4) prints of our Drawing No. 405, Sheet 3 of 3 and four (4) copies of revisions to Maxine Mine Permit Application Supplement- Exhibit III in "Outline - Work Elements Proposed for Assessment of Hydrologic Conditions of the Capped Area, Maxine Rock Disposal Area" (pages 3-5).

These revisions are being submitted in conjunction with your on-site inspection on Tuesday, February 8, 1983 and relate to modifications in handling surface water drainage during reclamation of the existing refuse disposal site.

Please add these exhibits and information to the Permit Application Supplement and give me a call if you have any questions.

Sincerely yours,

T. E. Musick

T. E. Musick

TEM:cc

Attachments

DRUM000438

REVISIONS DRAFT

PELA

SUBJECT TO REVISION

REVISIONS TO

Maxine Mine Permit Application Supplement - Exhibit III

in

"Outline - Work Elements Proposed for Assessment
of Hydrologic Conditions of the Capped Area,
Maxine Rock Disposal Area" (Pages 3 - 5)

Surface-water monitoring program.

Establish and maintain diversion ditches to segregate run-off from old material and capped area, monitor and assess surface-water quality and flow.

Diversion Ditches

- a. Capped area drainage - west ditch.
- b. Old area drainage - east ditch, north ditch and parallel ditch.

The north ditch, east ditch and west ditch are essentially in operation at the present time. Stabilization work is to be completed.

The parallel ditch is to be constructed. As needed, compacted dikes will be installed to insure physical separation of waters from the old area and waters from the capped area. Also, approximately 50-75 feet of natural terrain will separate the two ditches.

Cross-over areas will be designed and constructed such that waters from the capped area cross over the ditch conveying waters from the old area.

Water quality and discharge will be initially monitored on a bi-monthly basis. Monitoring will continue as specified in item 6 below.

Parameters to be monitored at 6 sites include: total iron, total manganese, total dissolved solids, total suspended solids and sulfate. Determinations will be made on site for pH, specific conductance and temperature. Flow will be measured with a current meter.

4. Ground-water and surface-water will also be monitored after storm events.
5. Monitoring on-site precipitation with Belforte rain gage already in operation.

PELA

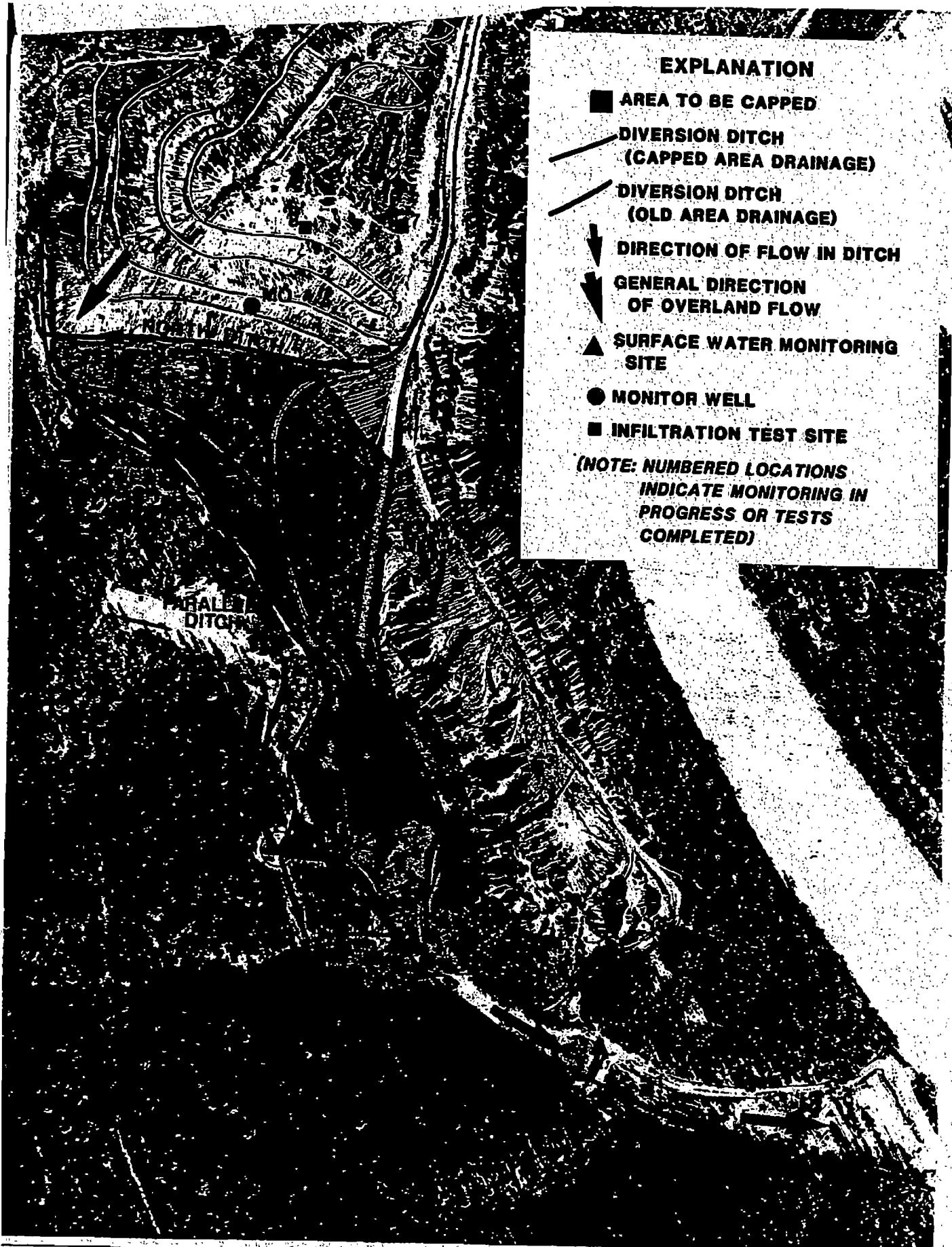
2

6. In accordance with additional information requested and included in Exhibit IV, ground-water and surface-water monitoring will be completed, until the vegetative cover is established on the capped area, on a bi-monthly basis or a frequency dependent on evaluation of results. After the vegetative cover has been established, monitoring will then continue at 2-month intervals for a minimum of one (1) year.
7. Submit progress reports (monthly or other approved frequency) to include results of monitoring, assessment and associate graphics.
8. Final assessment report.

Figure 2 is a schematic illustrating the hydrologic assessment program (final well locations have not been established).

P.E. LaMoreaux & Associates

DRUM000440



cc: Mr. Sheriff
Mr. Cook
Mr. Burdette
Mr. Bryant
Mr. Gilbert
Mr. Walker
Mr. Darden
Mr. F. McDuff
Mr. C. Jones
Mr. M. Edwards ✓

February 8, 1983

Memo To: File
From: T. Musick
Subject: Maxine Mine
Refuse Disposal and Reclamation Relative to
Mine Permit Application

Plans to create a new refuse disposal site and reclaim the post-law and breaker rock areas of the present refuse disposal sites were included and made a part of the mine permit application for subject mine. It has recently become necessary to change some proposed drainage patterns for surface water on the existing post-law refuse disposal area from the way those patterns appeared on the original permit application. The proposed changes will effect a cost savings plus offer a more practical approach to the overall plan but it is necessary to obtain approval of any changes from the Alabama Surface Mining Commission. For this reason I met with Randy Johnson and Steve Hinkle of ASMC and Lois George and Dr. Travis Hughes of P. E. Lamoreaux and Associates on this date to review the proposed changes on site.

We visited both the new refuse disposal site and the existing post-law refuse site and explained our proposed plans as submitted to and approved by management as outlined in a memo of estimated costs dated January 26, 1983.

Mr. Johnson made no adverse comments about the new refuse site but stated that he could not approve its use until the permit bonding was finalized and subsequent permit issued. It is my understanding that Mr. McDuff satisfied the bonding requirements on February 10, 1982.

At the existing post-law refuse disposal site, Mr. Jonson agreed with the plan to change the drainage pattern off the pre-law refuse and route it through a parallel ditch. He did not agree with our plan to allow surface water from the front or downstream slope of the present refuse site to co-mingle with water from the pre-law site at the toe of the slope. This does not appear to be a serious problem or detriment to the plan, but it will add some cost to the recent cost estimate. The slope has already been covered with clay and re-vegetated (except that portion at the very top which remains active) but will require some ditch construction, a catch basin and some sixty (60) to eighty (80)

- 2 -

feet of corrugated pipe to convey the collected surface water to an existing adjacent sediment basin. This project will be reviewed with the Superintendent and Resident Engineer early next week.

An addendum to the permit application showing the proposed changes will also be submitted to A.S.M.C. for their formal approval.

Tom Musick

TM:cc

T.M.

cc: Mr. Sheriff
Mr. Cook
Mr. Burdette
Mr. Bryant
Mr. Gilbert
Mr. Walker
Mr. F. McDuff
Mr. C. Jones
Mr. J. Darden
Mr. M. Edwards

January 31, 1983

TO: Those Receiving Copies
FROM: T. Musick
SUBJECT: Maxine Mine - Status of Refuse Sites

This brief report is being submitted for the record to keep those involved informed as to the progress of subject projects. A chronological outline will be used for simplicity.

November 23, 1982

Jefferson County Commission approved re-zoning of site for new refuse disposal area. Included was a Surety Bond in the amount of \$69,875.00.

December 10, 1982

Alabama Surface Mining Commission reviewed waste disposal plans (included in formal permit application) and found them acceptable. Letter stated that final approval would come in the form of issuance of Permit P-3254 for Maxine Mine.

December 13, 1982

Executed contract with Henderson Excavating to construct sediment basin and stockpile topsoil at new refuse site.

January 24, 1983

Personnel from ABC met with Dr. Petrie (Soils Consultant) and Lois George (P. E. Lamoreaux) to finalize plans for preparing the new refuse site and for covering, draining, and seeding the old refuse site.

The following suggestions were made:

I. New Refuse Site

1. The clay in its natural state is compact enough to begin dumping refuse.

- 2 -

2. Approximately four (4) tons per acre of agri-lime should be spread on clay surface prior to depositing refuse.
3. Larger breaker rock should be deposited along the lower edge of the new refuse pipe to aid in trapping sediment and increasing compaction on plant refuse.
4. Apply large stone (limestone) at the discharge of the Sediment Basin overflow pipes and on the upstream side of the dam. The dam was constructed of clay whose analyses indicate that it is slightly acid.
5. Agri-lime (4 tons per acre) should be added to each two foot lift of solid refuse.
6. A thin coat of agri-lime should be spread on the access road to the new disposal site.

II. Old Refuse Site

1. Old refuse should be graded and contoured to drain surface runoff with a minimum of velocity.
2. Cover old refuse with agri-lime at the rate of four (4) tons per acre.
3. Cover refuse with six (6") inches of clay compacted in two opposite directions.
4. Cover six (6") inch layer of clay with agri-lime at the rate of four (4) tons per acre.
5. Place final cover of eighteen (18") inches of clay and topsoil loose (uncompacted).
6. Plant cover crops in accordance with soil analysis.
7. Maintain drainage (westerly direction) from pre-law refuse area as it now flows between pre-law and post-law refuse areas but create a new parallel ditch in a southerly direction to separate waters from each area. This will eliminate construction of a large channel to reverse the direction of flow between the two areas as is shown on the permit maps. This change will need to be approved by A.S.M.C.

III. Breaker Rock Area

1. Since this rock is comparatively large and does not deteriorate readily, agri-lime is not required prior to coverage with clay.
2. Cover with six (6") inches of clay compacted in two (2) directions.
3. Cover with clay and topsoil until the source is depleted but not more than eighteen (18") inches. Leave this soil loose.

- 3 -

January 26, 1983

Henderson completed work on the new refuse site except one or two shifts with one dozer and a front-end loader to place rip-rap and dress up the area.

January 27, 1983

Lois George and Dr. Hughes of P. E. Lamoreaux and Associates met with Tom Musick on site and agreed the change in flow direction and the parallel ditch approach could be incorporated into their original plan of action.

Randy Johnson of A.S.M.C. indicated by phone that approval of the new refuse site could not be given until the pending Consent Decree was executed by A.B.C.

Fred McDuff tried to contact Ron Reeves of A.S.M.C. to return the Consent Decree but found that Ron would be out of office until Monday, January 31, 1983.

February 2, 1983

A meeting is scheduled at Maxine Mine with Randy Johnson (A.S.M.C.) to get tentative approval on the new refuse site and final approval on the drainage change for the old refuse site.

Tom Musick

TM:cc

September 13, 1982

TO: MR. GILBERT
MR. WALKER

FROM: T. E. MUSICK

SUBJECT: MAXINE MINE--REFUSE DISPOSAL PROJECT

As you know, P. E. Lamoreaux & Associates have been retained to assist us in the project to abandon and reclaim the present active rock dump and establish a new rock dump at another location. The attached report of findings and suggestions has been submitted by Lois George as a result of the field reconnaissance made on August 25, 1982.

Please review the report in light of discussing with a contractor and/or executing in-house when project approval has been received.

T. E. MUSICK

TEM:EA

T. E. M.

Attachment

cc: Mr. Sheriff
Mr. Cook
Mr. Burdette
Mr. F. McDuff
Mr. C. Jones
Mr. L. Wright
Mr. J. McDuff
Mr. M. Edward

P.E. LaMoreaux & Associates
Consulting Hydrologists, Geologists & Environmental Scientists

August 26, 1982

Mr. Tom Musick
Alabama By Products
Engineering-Mines
P.O. Box 10246
Birmingham, AL 35202

Dear Tom:

On August 25, 1982, a meeting was held at Maxine Mine. Present were Lois George and Phil LaMoreaux of PELA and Ronnie Key and yourself. As a result of our discussions and field reconnaissance, we are forwarding the following recommendations for actions and maintenance (also see attached figure) with regard to work elements for the Maxine Rock Disposal area:

1. Clean out new material from diversion ditch (site 1) and maintain open channel. Construct a berm on west side of ditch to prohibit overtopping of runoff, during periods of storm flow, onto area to be capped.
2. Install filter cloth dams or an alternative temporary sediment control (site 2) to collect suspended solids in runoff from capped area.
3. Construct a terrace (site 3) to divert drainage into upper diversion ditch (site 4) when capping is completed in that specific area, as drainage through the lower diversion ditch does not discharge into the catchment basin. This terrace will reduce the drainage area served by the lower diversion ditch (site 5).
4. Maintain spillway at "upper pond" (site 6).
5. Increase capacity of "upper pond" (site 7) by cleaning out.
6. Grade diversion ditch near river (site 8) to a down slope grade towards the river. The present grade slopes away from the river over a short stretch.
7. Build up a berm at south end of the "lower pond" (site 9) to prohibit any mixing of waters from old area with runoff from new area during periods of storm flow.
8. Block off diversion ditch at northwestern contact of new area and old area and grade and construct

Home Office: P.O. Box 2310 Tuscaloosa, Alabama 35403 Telephone 205/752-5543 Cable (PELA)

Offices: 4313 South Florida Avenue Lakeland, Florida 33803 Telephone 813/646-8526
1440 Bank For Savings Building Birmingham, Alabama 35203 Telephone 205/251-5283

Tom Musick

-2-

8/26/82

ditch to allow surface runoff to flow as indicated on attached figure. This is necessary to segregate runoff from old area and new area.

The above recommendations are presented at this time to facilitate planning and scheduling of work elements, to aid in insuring segregation of runoff, and stress the importance of monitoring and maintenance of certain features so as to attain a successful and acceptable project endeavor.

In accordance with monitoring plans submitted, one monitoring well will be installed up-dip from the area to be capped and one will be installed down-dip from the area to be capped.

Based on interpretation of aerial photography and as discussed, the new refuse material (the "area to be capped") is underlain by three different settings: 1) old refuse material, 2) valley fill material, and 3) natural ground. Much consideration has been given to this situation and it is recommended that, at a minimum, three test holes be completed and evaluated prior to finalization of establishing monitoring wells in the area to be capped.

If you have any questions, please advise.

Sincerely,


Philip F. LaMoreaux
President

PEL, Sr/dc

cc: Doug Cook


Lois D. George
Project Manager



bc: Mr. Sheriff/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Gilbert
Mr. Walker
Mr. F. McDuff
Mr. Curt Jones

June 16, 1982

Mr. Bill Harris
Alabama Surface Mining Reclamation Commission
P. O. Box 2390
Jasper, Alabama 35501

Dear Mr. Harris:

Mrs. Lois George of LaMoreaux and Associates has indicated that you have contacted PELA requesting information relative to drainage from the rock-storage area at Maxine Mine.

In keeping with your request, please find attached a copy of the water quality study prepared by PELA for that area, which has been previously submitted to AWIC in January of 1981.

If we can be of any further assistance, please do not hesitate to contact us.

Sincerely,



Moyer B. Edwards
Director Environmental Control

MBE:r1
Encl.

DRUM000465

STATE OF ALABAMA
WATER IMPROVEMENT COMMISSION

Ira L. Myers, M.D.
Chairman, State Health Officer

John McMillan, Jr.
Vice Chairman
Commissioner, Department of
Conservation and Natural Resources

Office Location:
2721 Gunter Park Dr., West
Montgomery, Alabama



James W. Warr
Director

RECEIVED

AUG 26 1981

A. B. C.
ENV. CONTROL

Commission Members:
Taney A. Brazeal, Sr., Fairhope
Charles O. Cargile, Hueytown
Frank E. Lindstrom, Sr., Birmingham
David L. Thomas, Montgomery
Dr. John H. Winston, Jr., Montgomery

Mailing address:
Public Health Services Bldg.
Montgomery, AL 36130
Telephone 205/277-3630

August 25, 1981

8/26/81 Copies from MRE to:
Mr. Breland/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Gilbert
Mr. Walker
Mr. Brown
Mr. Bradford

Mr. Moyer B. Edwards
Alabama By-Products Corporation
Post Office Box 10246
Birmingham, Alabama 35202

Dear Mr. Edwards:

We are in receipt of your plan for pollution abatement at the Maxine Mine Rock Refuse Dump. Based upon a review of the material and an on-site survey, the plan has been approved.

Once construction of the facilities has been completed, please contact Mr. Alex Napier of this office for an inspection.

Sincerely,

Joe B. Myers
Supervisor, Mining Activities
Water Improvement Commission

JBM:RAN:dst

bcc: Mr. Breland/Burdette
Mr. Musick
Mr. Edwards
Mr. Brown
Mr. Gilbert
Mr. Walker

Maxine Acid Trough

June 16, 1981

Mr. Joe Myers
Supervisor - Mining Activities
Alabama Water Improvement Commission
Public Health Services Building
Montgomery, Alabama 36130

Dear Mr. Myers:

We respectfully submit for your consideration and approval the following plan which will be implemented at the Maxine Mine site. We would note that prior to arriving at this plan of action Alabama By-Products Corporation considered other options some of which were discussed during our meeting between the AWIC Staff and Alabama By-Products Corporation representatives on October 28, 1980. However, there were none in our opinion that were as promising as the following which also was discussed during our meeting on the above noted date.

This request is made for the Maxine disposal area in which a phased or stage approach is proposed. The area in question is a drainage area which collects water from both refuse disposal and undisturbed ground, all sloping to a common drainage course. In the past ABC has constructed impoundment structures in tandem for silt containment, as well as to construct a diversion channel above the upper portion of the refuse area. This diversion prohibits the waters falling on the upper undisturbed areas from coming in contact with the disposed refuse. Later the diversion channel was extended to segregate additional runoff from the undisturbed areas.

The plans being presented to you would consist of removing silt necessary for a drainage ditch shown on the attached drawing, extending the diversion channel to the river thus isolating the large storm runoff from the undisturbed area west of our refuse disposal site. We would then construct a diversion channel on the eastern side of the drainage course to again isolate undisturbed runoff water from that side.

The next step would be to put limestone in the drainage ditch of the lower silt structure coupled with a limestone filter adequately sized which would be approximately 25 feet wide x 60 feet long to accommodate the runoff of excess water.

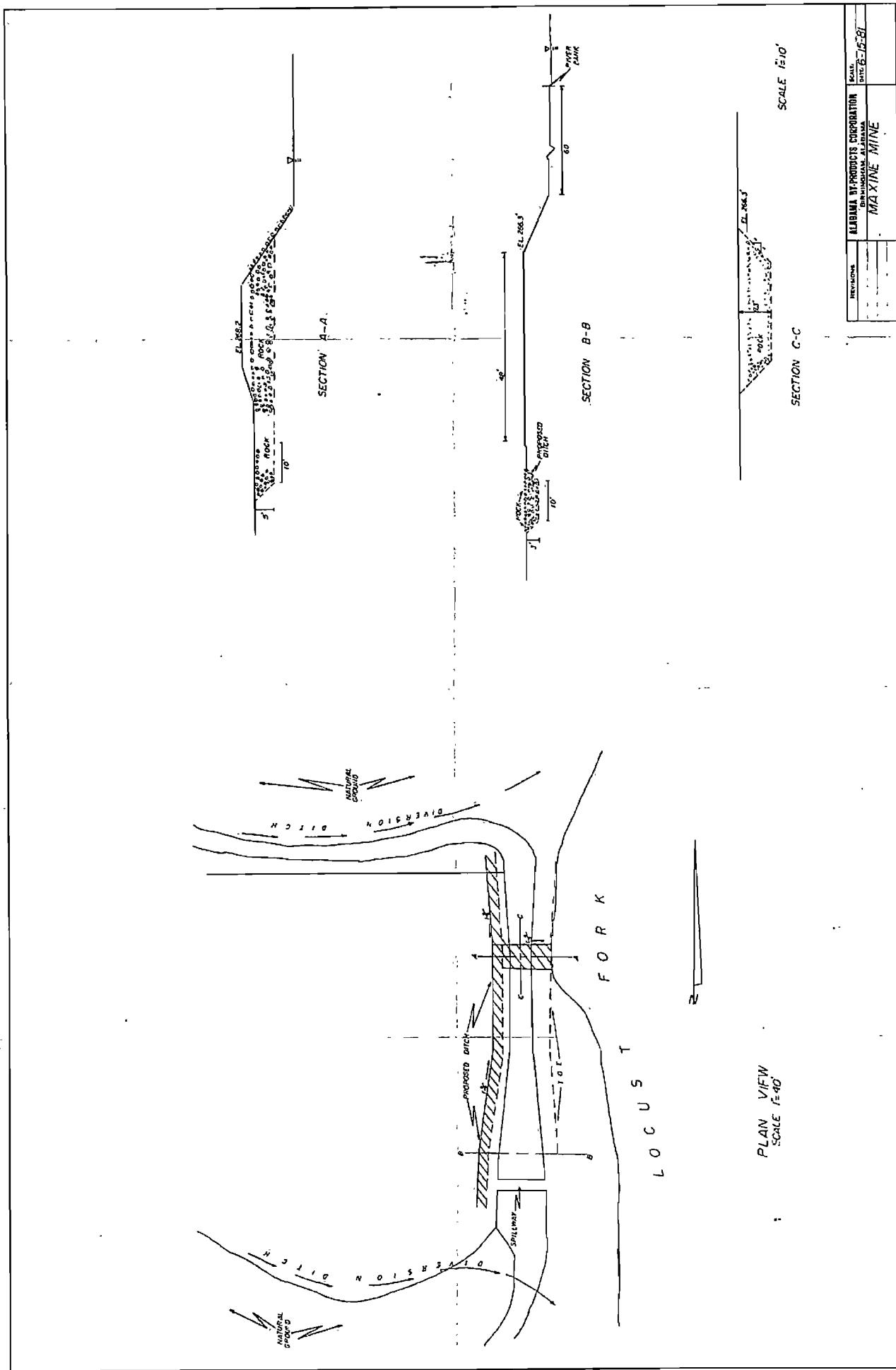
Mr. Joe Myers
June 16, 1981
Page Two

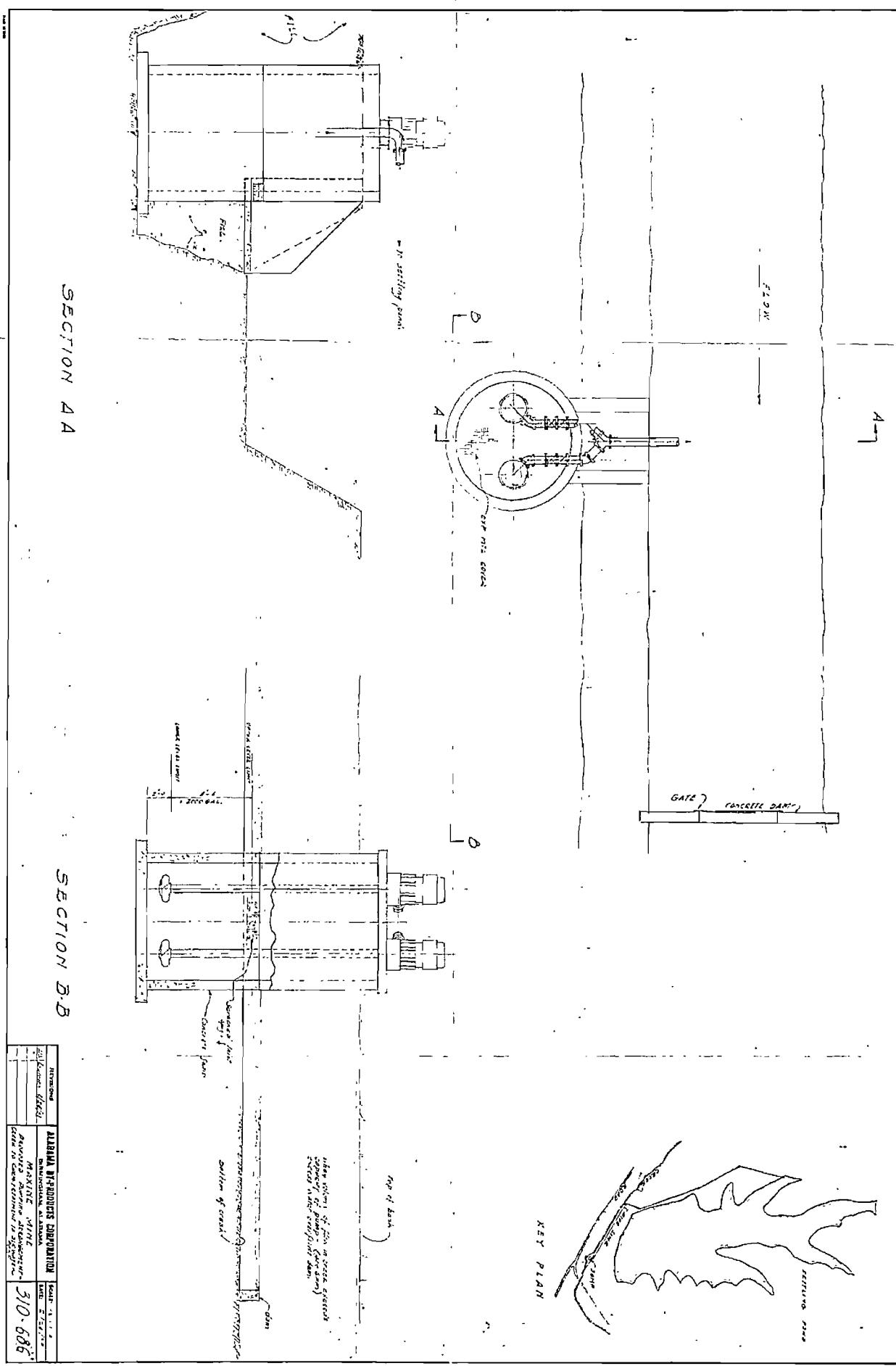
Based upon weather, availability of labor and early approval of this project by the AWIC, we would plan to have the diversion channels completed by August 1, 1981 and the entire project completed by November 30, 1981. Again, as stated, this of course would be contingent upon the weather and labor problems.

Sincerely,


Moyer B. Edwards
Director Environmental Control

MBE/ba





(.02 N)
Titrant (Unknown
Influent)

N. Landgraf

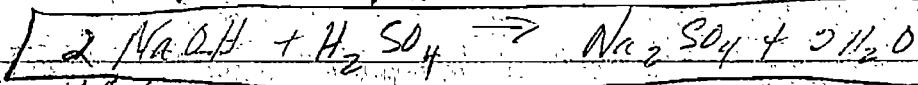
John Carson

Bob Burdette

Dean Payard

5. Mr. D. F. Jr.

is deleted



If:

100 ml of sample takes 5 ml of .02 N NaOH to reach $\text{P}_{\text{methylphthalein Point}}$ (8.3 pH) you can calculate the amount of NaOH to add as follows:

EXAMPLE: (NaOH)

$$.02 \times 10^{-3} \text{ mol} \times 40 \text{ grams} = .8 \times 10^{-3} \text{ or } 8 \times 10^{-4} \text{ g/mol}$$

$$\text{If it takes } 5 \text{ ml } \times 8 \times 10^{-4} \text{ g/mol} = 40 \times 10^{-6} \text{ g/100 ml}$$

$$\frac{40 \times 10^{-6} \text{ g/ml}}{10^{-3} \text{ ml/ml}} \times 3785 \text{ ml} \times \frac{1 \text{ L}}{1 \text{ gal}} = 45.4 \text{ g}$$

$$4 \times 10^{-5} \times 8.34 \text{ L} = 33.36 \times 10^{-5} \text{ L/gal}$$

Return Influent flow

ml/min

Am + Mo/min or Mo/L

5 ml 100 gal/min

33.36×10^{-5} Mo/gal

.0334

6.0 min

2.1 L/hr

150 gal/min

33.36×10^{-5} Mo/gal

.0500

6.0 min

3.1 L/hr

Equipment Needs:

Costs

Moore Pipette

~ 5.00

Graduated Cylinder 100 ml

6.60

Erlenmeyer Flasks 250 ml

5.20

Phenolphthalein (1 bottle)

~ 10.00

\$26.80

The "P" endpoint is pink - sample will be colorless initially; add 2-3 drops to sample first then titrate with .02N NaOH solution until pink color appears. Record amount of ml of titrant and then calculate Mo/hr. as shown in example above.

bcc: Mr. Breland/Burdette
Mr. Musick
Mr. Edwards
Mr. Gilbert
Mr. Walker
Mr. J. McDuff
Mr. Bradford

October 29, 1981

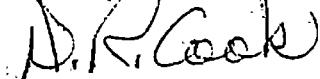
Mr. Joe Myers
Supervisor - Mining Activities
Alabama Water Improvement Commission
Public Health Services Building
Montgomery, Alabama 36130

Dear Mr. Myers,

The pollution abatement work at the Maxine Mine Refuse Disposal Area has been completed according to the plans submitted on June 16, 1981 and approved on August 25, 1981.

Please advise the date your inspector will visit the site so that I can arrange for one of our engineers to be present during the inspection.

Yours very truly,



D. R. Cook
Vice President Engineering-Mines

DRC/ba

DRUM000477



ALABAMA BY-PRODUCTS
CORPORATION

cc: Mr. Brianne Gette
Mr. Cook/Musick
Mr. Brown
Mr. J. McDuff
Mr. Edwards
Mr. Gilbert
Mr. Walker

TO Mr. Doug Cook
FROM Mr. James Brown
SUBJECT Maxine Mine - Proposed Control of Acid Mine Drainage

DATE February 3, 1981

The following is a proposal for control of acid mine drainage from the refuse disposal area at Maxine Mine. The steps listed are considered to be the sequence which should be followed to implement what is a possible solution to the problem.

1. A 25-foot wide x 6-foot deep notch will be cut in the dam at the location shown on Sketch 1.
2. The notch will be promptly filled with stone from 6-inches to 12-inches in diameter. (See Sketch 2.) This stone will be placed on the downstream slope of the dam to below the river water line. The area below the notch will have to be dredged to some extent so that the stone can extend below the river water level. (See Sketch 3.)
3. A layer of crusher run stone of up to 6-inch diameter will be promptly placed on the large stone in the notch, across the entire length of the top of the dam and on the entire upstream and downstream slopes. Thickness of this layer will be about 1-foot.
4. Upon completion of Items 1, 2 and 3, a trench will be excavated in the location as shown on Sketch 1. Trench slope will be about 1%, width at the bottom will be about 10-feet. The trench will be promptly filled with stone of from 6-inches to 12-inches in diameter to approximate sediment level presently in the pond. (See Sketches 2 and 3.) Crusher run stone will extend to cover this large stone. (See Sketch 4.)

The approximate total amount of stone will be 2350 tons based on 145 tons per cubic foot.

5. Concurrent with construction on the dam, diversion ditches should be cut as shown on the attached topographic map of Maxine. At least one dam will have to be constructed to assist in proper control of diverted runoff. The existing diversion ditch will have to be extended to carry runoff to the dam.
6. A diversion ditch will have to be cut in the refuse above the present diversion ditch to prohibit intermingling of runoff from the refuse disposal site and the runoff from undisturbed (by mining) areas.

Approximately 3300 feet of additional diversion ditches will be required.

JAB:psf

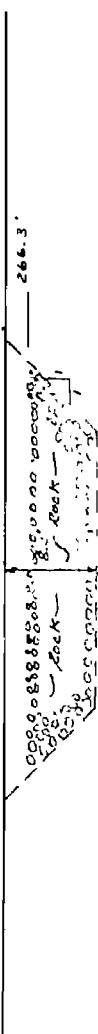
1270 T 8-24-81



DRUM000495

SKETCH 2

Maple Mine
Down Below Surface
Scale 1"=50'
E-Z-B/

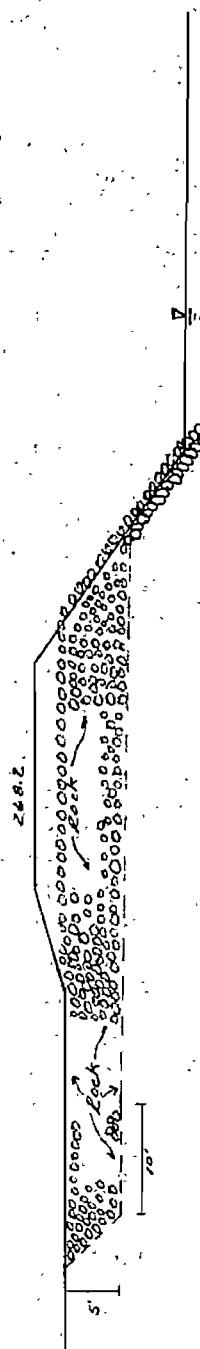


Section C-C
Elevation 1400
Proposed Portal
Through Dam

DRUM000496

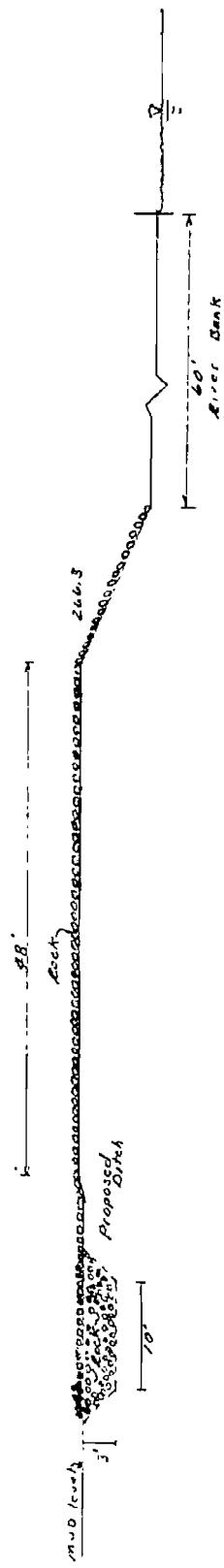
SKETCH 3

Maine Mine
Dam Below
Pt 18
Scale
1:250
2-2-81



Section D-A
1:250

۵۰۰ متر



Marine Mine
Dumb Below Before ~~the~~
Scale 1" = 10'
2.2-81

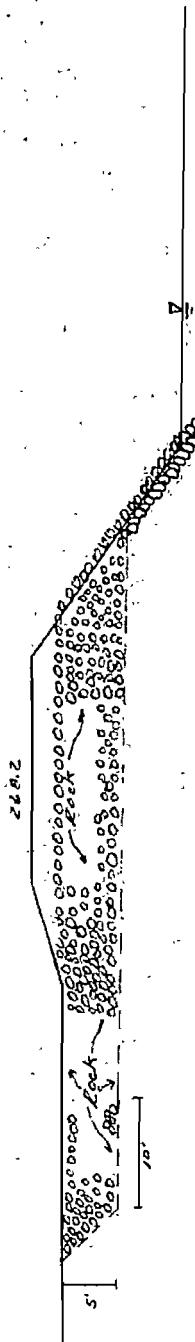
SKETCH 4

DRUM000497

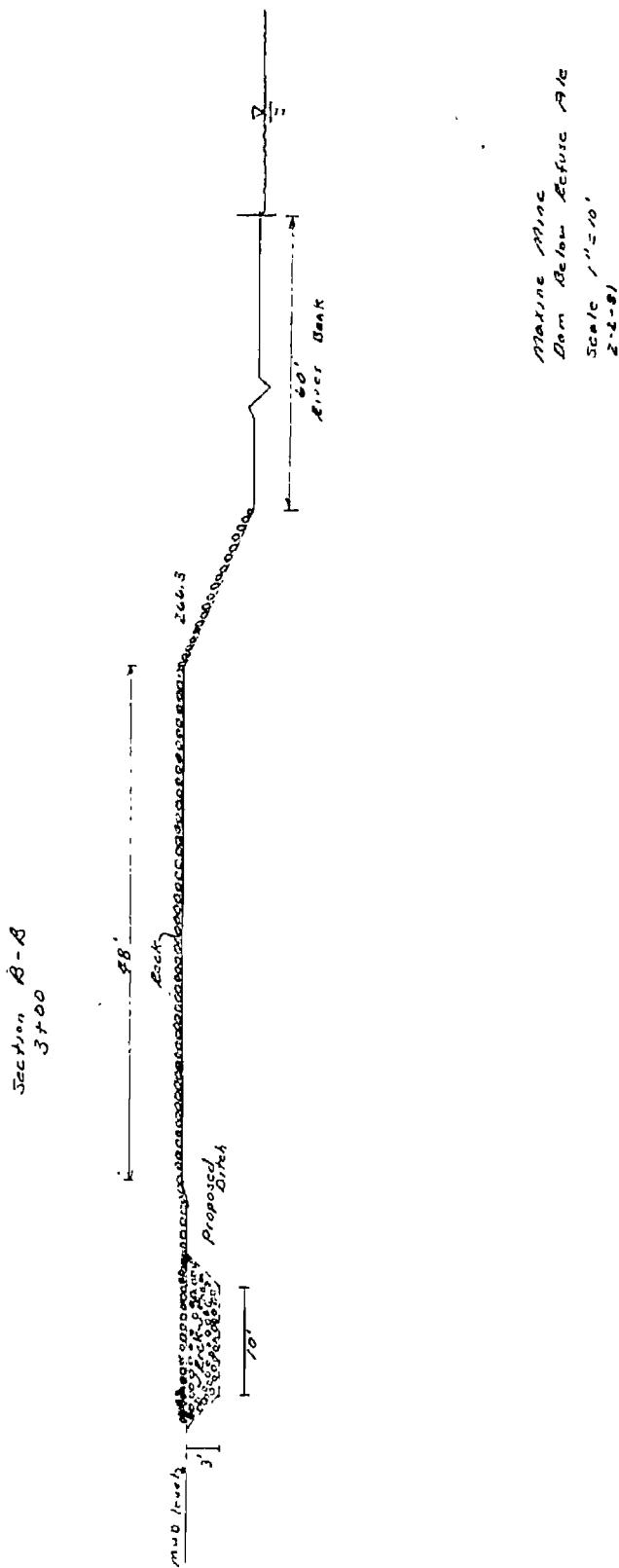
DRUM000498

SKETCH 3

Marine Mine
Dam Below
Site
Date
Scale
2-2-81

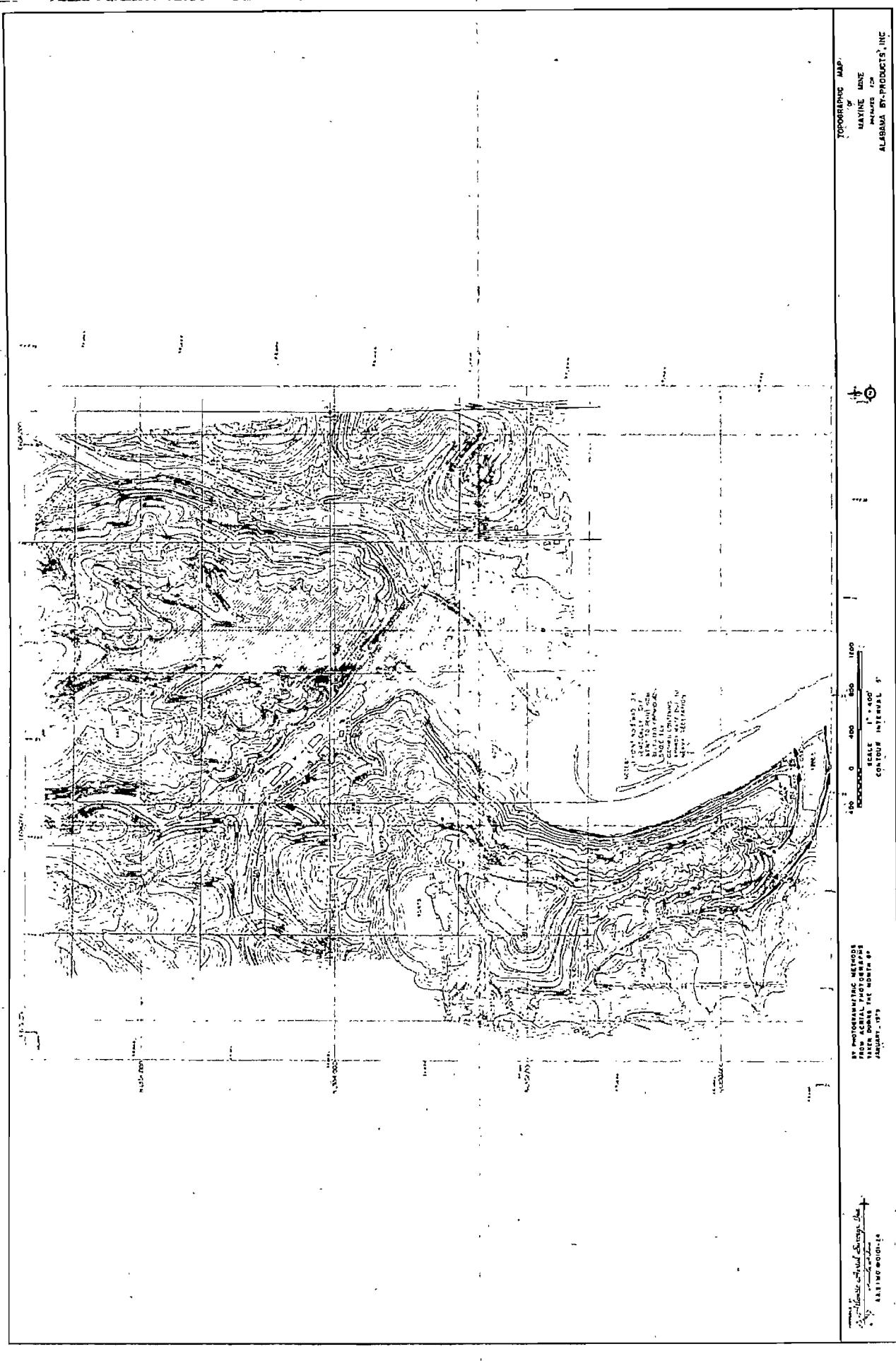


Section A-A
1400



Sketch 4

DRUM000499



Maxine Treatment

January 20, 1981

MEMO TO FILE:

On January 19, 1981 I discussed with Gary Walker the conversations we had with Mr. Meyers of AWIC relative to the Maxine refuse disposal area. I indicated to Walker that I would discuss this with him at the first possible time this being it I noted to Walker that the State was looking at a possibility of our installing something similar to a filter dike next to the river with variations upstream of diverting water around the second impoundment structure and/or cutting a opening in the second impoundment structure in order to allow this water to come through on a rather rapid rate and not be retained long enough to pick up acid from the spoil piles.

We next discussed the creek running behind the washer and the work that this gentleman have done digging the creek out. It appears as though ^{the contractor} he has done a rather good job but ^{and} he has created several pockets, so to speak, ^{in the} up creek in order to allow the sediment to drop ^{out} prior to getting to Cane Creek.

Mr. Walker informed me that this gentleman did this work for about one-third the price usually charged by Mr. Henderson, plus there was no charge for bringing his equipment into Maxine nor/wax there one for one for taking the equipment out. I understand Mr. Henderson usually charges a coming and going fee.

EDWARDS

MBE:rl

bb: Mr. Breland/Mr. Burdette w/copy of report
Mr. Cook/Mr. Musick
Mr. Brown - w/copy of report
Mr. Gilbert- ditto
Mr. Walker- ditto
Mr. McDuff, F.- ditto

*Marked
Revised
1/12/81*

January 12, 1981

Mr. Joe Meyers
Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36130

Dear Mr. Meyers:

We are aware of your concern, as expressed during a meeting on October 28, 1980, that there is a possibility that drainage from preparation plant reject storage areas could affect the quality of water in the Locust Fork of the Warrior River.

As I have indicated in communication subsequent to that meeting, we have engaged LaMoreaux & Associates to conduct a study dealing with this possibility and have attached a copy of this study containing their recommendation. We have, in addition, initiated an in-house investigation and preliminary study on measures which may improve the quality of this discharge. In broad terms, this study will investigate feasible means of facilitating the exit of storm runoff from this area and the possible reduction of the time which pyritic material in the area may be exposed to oxidation.

To keep you abreast of our efforts in this area in a timely fashion as stages of this investigation are completed, we shall forward to you interim conclusions even though they may be in rough form.

Should you have any questions do not hesitate to contact us.

Sincerely,


Moyer B. Edwards
Director Environmental Control

MBE:r1
Attachment

PELA

ASSESSMENT OF EFFECT OF DRAINAGE FROM THE
ROCK-STORAGE AREA, MAXINE MINE, AS
IT RELATES TO THE WATER QUALITY OF
THE LOCUST FORK

PREPARED FOR
ALABAMA BY-PRODUCTS CORPORATION

BY
P. E. LaMoreaux & Associates, Inc.
Tuscaloosa, Alabama 35403

January, 1981

P.E. LaMoreaux & Associates

DRUM000503

PELA

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Executive Summary	1
Conclusions	2
Recommendations	4
Introduction	5
Methodology	6
Testing	7
Calculations	9

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2. Profile A, first specific-conductance run	11
3. Profile A, second and third specific- conductance runs	12
4. Profile B, specific-conductance run	13

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EXECUTIVE SUMMARY

To assess the effect of drainage from the Maxine Mine rock storage area as it relates to the water quality of the Locust Fork the following work elements were completed:

1. Establishment of sites of sampling/testing profiles on the Locust Fork, one downstream from the rock-storage area main discharge at M-2 and the second upstream from the mine operational area (fig. 1, profiles A and B).
2. Determination of river-water stratification at profiles A and B and the extent of the mixing zone by means of specific-conductance readings (figs. 1-4).
3. Data assimilation, interpretation and report preparation.

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2

CONCLUSIONS

1. At the time of field investigations (December 4, 1980), there was no apparent water-quality stratification in the Locust Fork in the vicinity of the Maxine Mine of Alabama By-Products Corporation. This absence of stratification is due to flow conditions resulting from the start of the rainy season, river traffic continuously mixing the water, or both.
2. The specific conductance of the Locust Fork, at the time determinations were made, was very uniform and varied little from 120 micromhos (μ mhos).
3. On the basis of the specific-conductance determinations, the mixing zone of the waters from discharge M-2 and the river is approximately 40 feet in width, is limited to the shallow side slope area of the river-bottom profile, and generally is limited to a water depth of 10 feet or less. The water discharged at M-2 is immediately deflected downstream and "hugs" the river bank.
4. Conductivity traverses along the west bank indicate that, at the time of testing, sufficient mixing and dilution resulted in "normal" conductance of 120 micromhos approximately 180 feet downstream from discharge M-2.
5. Specific conductance in the mixing zone ranged from 125 to 190 micromhos.

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3

6. The mixing zone, where present, represents only about 7.4 percent of the river volume based on the stream-channel configuration and water depths determined at profile

A.

7. The conditions described above are representative of flow conditions between low flow and flood flow. Flood flow will result in greater dilution and mixing.

8. Low discharge from the rock-storage area in comparison to the flow of Locust Fork during all periods of flow indicate that the volume of mineralized water contributed to Locust Fork is insignificant. The chemical character of water in the Locust Fork is affected only slightly, and only in a narrow zone of mixing.

9. Because the denser, more mineralized discharge water in the mixing zone has a non-uniform flow pattern, a representative sampling program cannot be established.

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RECOMMENDATIONS

1. Use data collected and evaluated in this study as representative of flow conditions between low and flood flow.
2. A program of sampling and water-quality analyses across the profiles (A and B) is not needed or feasible.
3. Rerun specific-conductance profiles (A and B) during low-flow conditions. Data collected should be evaluated, and recommendations should then be made for future monitoring.
4. Maintain spillway and dam at M-2 discharge to eliminate random discharge.
5. Monitor total suspended solids at M-2. Results from bi-monthly monitoring (January through August 1980) show that total suspended solids have ranged from 5.9 to 130 parts per million and averaged 41.3 parts per million from 12 grab samples collected when M-2 was discharging. Suspended solids can be controlled, and such control would eliminate more sediment deposition at the discharge site.

— P.E. LaMoreaux & Associates —

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5

INTRODUCTION

The rock-storage area at the Maxine Mine was studied and monitored during an earlier work phase in order to establish the hydrogeologic setting, ground-water levels, stream flow fluctuations, and the relationship between the ground-water and surface-water systems. Recommendations were made for treatment and disposal of the highly mineralized water. Treatment dosage rates and costs were calculated for disposal of water into an abandoned portion of the mine; however, treatments costs are not feasible.

The next phase of study requested, was to assess the effect of drainage from the rock storage area as it relates to the water quality of the Locust Fork. Results of this study are presented in this report.

— P.E. LaMoreaux & Associates —

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6

METHODOLOGY

To establish stream stratification (chemical) and the extent of the mixing zone where discharge at M-2 enters the river water and to ascertain the chemical nature of the mixing zone, determinations of specific conductance were made with a portable meter. Readings were taken at the M-2 discharge, at regular intervals and depths across profiles A and B (fig. 1, 2, 3, and 4), and within the mixing zone and shore area in the vicinity of discharge M-2.

Specific conductance of water is a measure of the ability of water to transmit an electrical current and is directly related to the dissolved solids content of the water. Specific conductance, therefore, is an indication of the degree of mineralization of water and can be used to estimate specific ion concentrations. For these reasons and because determination of specific conductance is accurate and economical, specific conductance was utilized in this study.

In conjunction with the conductance runs on profiles A and B, channel depths were measured for use in channel cross-section preparation.

Profile A was located 125 feet downstream on Locust Fork to compensate for future larger discharges and overland flow along the beach bench should further sampling be warranted.

PE.LaMoreaux & Associates

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7

TESTING

Results of specific conductance runs are shown in figures 2, 3, and 4. During the second and third runs on profile A (fig. 3), readings were spaced at closer intervals to obtain more detailed information on the mixing zone.

As shown on figures 2 and 3, the mixing zone at profile A is confined to the shelf area of the river channel and is approximately 40 feet in width. Specific conductance in the mixing zone ranged from 120 to 190 micromhos as determined in the three runs at profile A and conductivity traverses along the west bank. Specific conductances recorded during the traverses also indicate that the mixing zone extends approximately 180 feet downstream from the discharge point at which point conductance values returned to 120 micromhos.

Water samples were collected for chemical analysis at discharge M-2 and within the mixing zone (Mi-1) so that the chemical nature of the waters at these two points could be compared. The results are as follows:

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8

Date Collected: December 4, 1980

M-2

Mi-1

Field analysis

Temperature (°C)	8.5	11
pH	3.1	6.5
Specific conductance (μ mhos)	4,150	140
Flow (gpm) ¹	35	---

Parameters (results in ppm)²

Total iron	373	1.90
Total manganese	30	0.78
Total dissolved solids	8,360	104
Total suspended solids	15.6	19.2
Sulfate	6,080	58

¹gpm = gallons per minute

²ppm = parts per million

Results of analysis for pH, total iron and manganese, and total suspended solids indicate that discharge waters have been significantly diluted in the zone of mixing.

— P.E. LaMoreaux & Associates —

DRUM000512

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9

CALCULATIONS

Assuming the channel configuration from discharge M-2 to the downstream extent of the mixing zone (180 feet downstream from discharge M-2) to be similar to the channel configuration at Profile A, calculations were made to represent the area of the stream channel along this 180 foot section of the river. Then using the 40 foot width of the mixing zone, calculations were made indicating the area of the mixing zone. The results are that only 7.4 percent of the river channel along the 180 foot section is occupied by the mixing zone. Or, 325,800 gallons of mixing zone water is only a portion of the 4,344,600 gallons of water in the 180 foot section of the Locust Fork.

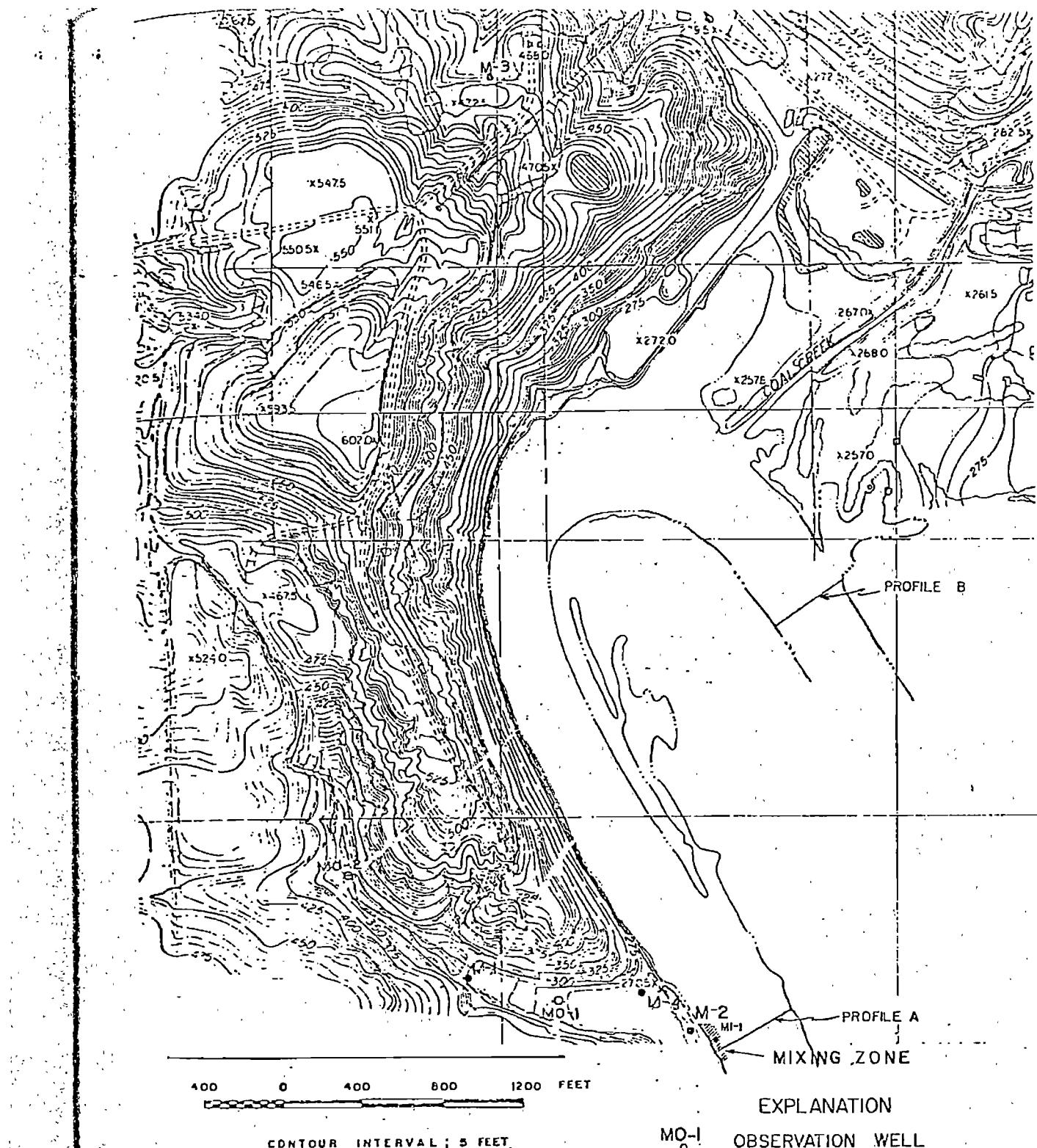


Figure 1. Sampling-site location map.

P.E.LA

11

1st RUN

12-4-80

PROFILE A

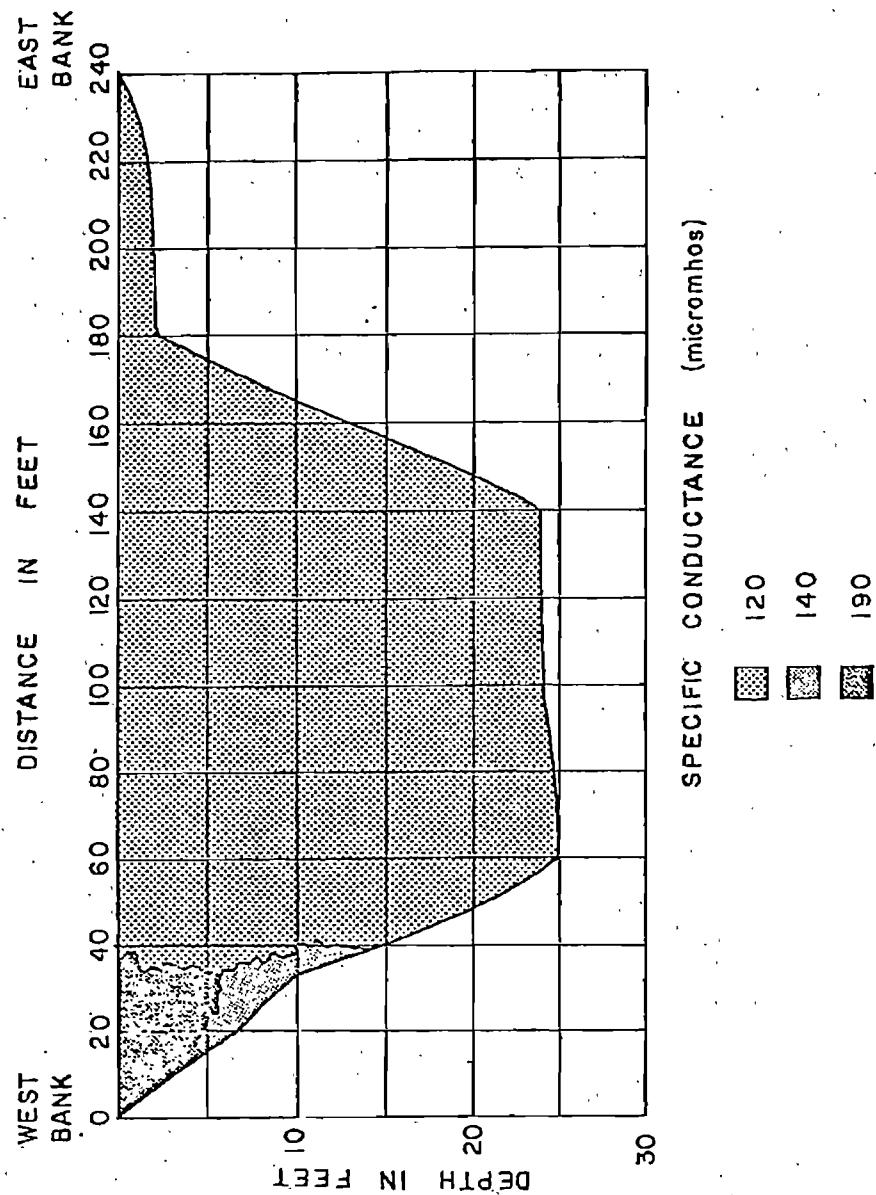


Figure 2. - Profile A, first specific-conductance run.

-- P.E. LaMoreaux & Associates --

DRUM000515

DELA

12

PROFILE A 12-4-80

2nd RUN

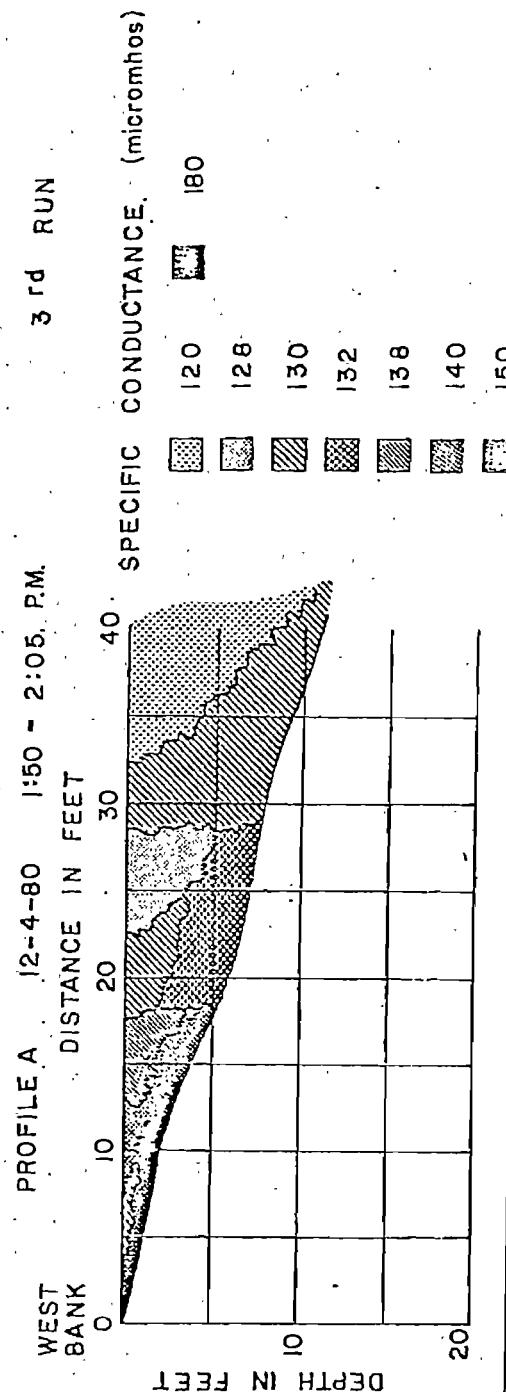
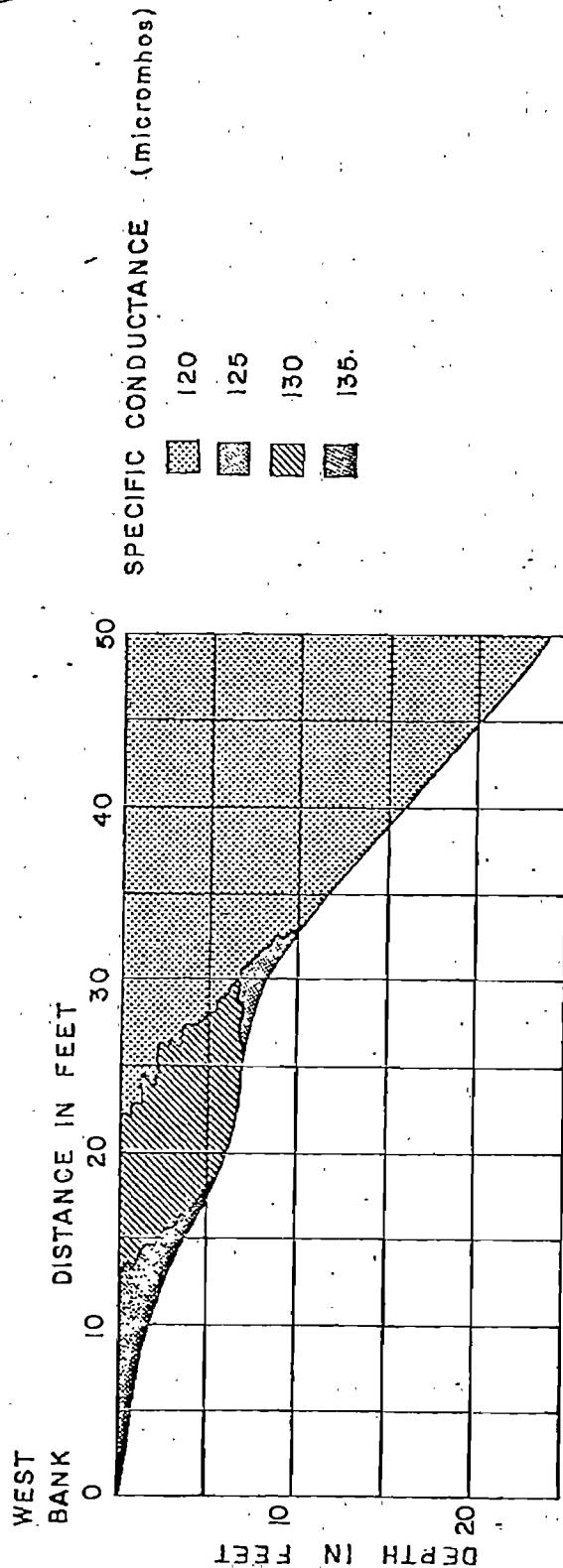
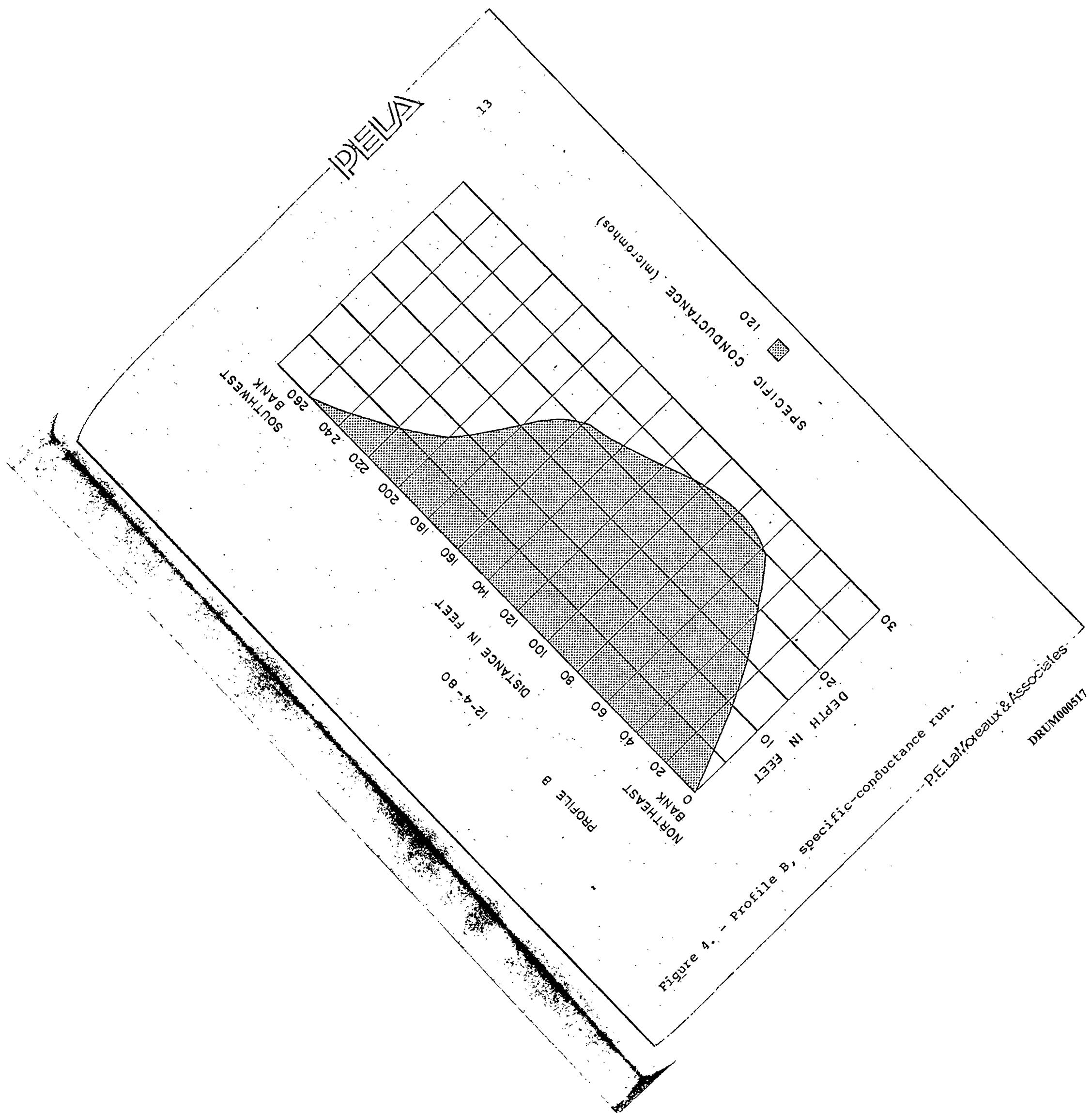


Figure 3. - Profile A, second and third specific-conductance runs.

P.E. LaMoreaux & Associates

DRUM000516



1/1/81-

Mr. re: RUST - Maxine
Meyer, Cook, Illinois

Gas Gas Limestone Study (part D)

Re: Letter stating status of
Fifth Dam Study
Bad H2O in upper & lower basin

Based upon our mtg of Oct 28, 1980
we realize your genuine concern of
possible damage that may result
to the dam from the non
descrete release from upstream.

7. (circle) As I have indicated
in communication subsequent to that
meeting we have engaged Oppenauer
of Davis and are attacking a followup
of the Oppenauer report and
upon his final analysis to the problem
of providing you to the info at the
earliest time.

November 26, 1980

MEMO TO FILE:

On 11/25/80 I telephoned Mr. Joe Meyers of ANIC. Mr. Meyers asked if I had sent a letter in regards to the Maxine runoff problem to ASMRC, I stated that I had not but it was my understanding that he, Mr. Meyers, would forward this letter to ASMRC.

We next discussed that we possibly should have included some additional information to which Mr. Meyers was unsure at this time as to just what. He did mention a filter dam and cutting a direct-channel from the upper dam to the river.

EDWARDS

MBE:rl

DRUM000525

STATE OF ALABAMA
WATER IMPROVEMENT COMMISSION

Ira L. Myers, M.D.
Chairman, State Health Officer

Richard A. Forster
Vice Chairman
Commissioner, Department of
Conservation and Natural Resources

Perry Hill Office Park
3815 Interstate Court
Montgomery, Alabama



James W. Warr
Director

August 7, 1980

RECEIVED

AUG 8 1980

A. B. C.
ENV. CONTROL

Commission Members:
Taney A. Brazeal, Sr., Fairhope
Charles O. Cargile, Hueytown
Frank E. Lindstrom, Sr., Birmingham
David L. Thomas, Montgomery
Dr. John H. Winston, Jr., Montgomery

Mailing address:
State Office Building
Montgomery, AL 36130
Telephone 205/277-3630

8/11/80 copies from MBE to:
Mr. Breland/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Grover
Mr. Gilbert
Mr. Walker
Mr. McDuff, J.
Mr. Bradford

Mr. Moyer Edwards
Alabama By-Products Corporation
Post Office Box 10246
Birmingham, Alabama 35202

Dear Mr. Edwards:

This letter is to acknowledge receipt of your letter of June 9, 1980, in which you proposed a concept of treating the Maxine Mine acid water problem by piping the water to an abandoned portion of the underground mine, subsequent to the water being treated with a calcium oxide slurry.

After a site survey and review by the technical staff, your proposal is approved. Bypass of the treatment system by storm runoff from a worst in ten-year 24-hour precipitation event would be acceptable; however, the outfall from the deep mine dewatering operations must meet permit limits.

If you should have any questions regarding this matter, please feel free to contact Mr. Ashley Chadwick or the undersigned.

Sincerely,

Joe B. Myers
Supervisor, Mining Activities
Water Improvement Commission

JBM:dst

bc: Mr. Breland/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Brown
Mr. Gilbert
Mr. Gary Walker

October 30, 1980

Mr. Philip E. LaMoreaux
P. E. LaMoreaux & Associates
P. O. Box 2310
Tuscaloosa, Alabama 35401

Dear Mr. LaMoreaux:

I am writing this letter to confirm the telephone conversation between our Mr. Douglas Cook and your Ms. Lois Dildine on Wednesday, October 29, 1980.

As an additional facet to the Rock Storage Project at our Maxine Mine, we would request that you assess the effect of drainage from this area as it relates to water quality of the Warrior River. This study should include the following parameters - pH, Suspended Solids, Iron and Manganese.

Yours truly,


Moyer B. Edwards
Director Environmental Control

MBE:r1

cc: Mr. Joe Meyers
Alabama Water Improvement Commission
Public Health Services Building
Montgomery, Alabama 36130

P.E. LaMoreaux & Associates
Consulting Hydrologists, Geologists & Environmental Scientists



October 2, 1980

Copy 10/6/80 from DRC to:

Mr. Breland/Burdette
Mr. Brown
Mr. Edwards

Mr. Douglas Cook, Vice President
Alabama By-Products Corporation
Engineering - Mines
P.O. Box 10246
Birmingham, Alabama 35202

Dear Mr. Cook:

Based on PELA's detailed study of the rainfall/runoff circulation of water through rock fill material and movement of ground water in the abandoned mine section, we have determined the amounts of water that must be treated to bring about complete remedial control of discharge from the Maxine Rock Storage Area. The volumes of water, treatment and cost are summarized as follows: (detailed computations and results of studies are attached).

1. One-time treatment volume for water existing in mine,

$$318.9 \times 10^6 \text{ gallons} = 2.65 \times 10^9 \text{ lb H}_2\text{O}$$

to: pH 8 \$56,800

9 \$94,600

10 \$189,000

2. Treatment of water pumped from mine (approximately 500 gallons per minute - mine water inflow).

$$0.676 \times 10^6 \text{ gal/day} (365 \text{ days/yr}) = 246.7 \times 10^6 \text{ gal/yr}$$

(470 g/m)

$$= 2.058 \times 10^9 \text{ lb H}_2\text{O/yr}$$

to: pH 8 \$85.26/day

31,119/yr

9 \$142.08/day

\$1,859/yr

10 \$284.11/day

103,700/yr

Home Office: P.O. Box 2310 Tuscaloosa, Alabama 35403 Telephone 205/752-5543 Cable (PELA)

Offices: 4313 South Florida Avenue Lakeland, Florida 33803 Telephone 813/646-8526
1440 Bank For Savings Building Birmingham, Alabama 35203 Telephone 205/251-5283

Mr. Douglas Cook
October 2, 1980
Page Two

3. Treatment of oxidized sulfur water from rock fill area - estimated average 380 gallons per minute.

$$197.7 \times 10^6 \text{ gal/yr} = 1.65 \times 10^9 \text{ lb H}_2\text{O/yr}$$

to: pH 8 \$4,548.00/day

$$1.66 \times 10^6$$

1.7
2.2
2.7

pH 9 \$5,698.00/day

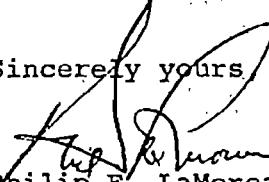
$$2.079 \times 10^6$$

pH 10 \$7,287.00/day

$$2.659 \times 10^6$$

If you have any questions concerning any of the above, please advise.

Sincerely yours,


Philip E. LaMoreaux

President

PEL:jt

Attachment

PELA

3

ABC MAXINE ROCK STORAGE AREA

Titrations - 15 August 1980

Sample Titrated: 15 ml

Titrant: 0.944 N NaOH

M-4

<u>Titrant Volume</u>	<u>pH</u>	(Values read from graphs)
0	3.15	
4.8	4.20	
8.0	8.00	
13.0	9.35	
15.0	11.15	

Well 35

0	6.35
0.5	9.05
1.0	10.05
1.6	10.75
2.1	11.05
2.5	11.45

M-2

0	3.60
1.0	3.24
2.0	3.65
4.0	3.85
3.0	4.35
17.0	10.65

Well 325

0	6.60
0.5	9.95
1.0	10.90
1.6	11.30
2.0	11.50

Well MO-2

0	3.45
4.0	4.30
8.0	4.45
12.0	5.60
18.0	7.25
22.0	8.55
33.0	10.05

Well MO-1

0	2.95
10.0	5.60
20.0	8.55
29.0	10.40

P.E. LaMoreaux & Associates

DRUM000537

PELA

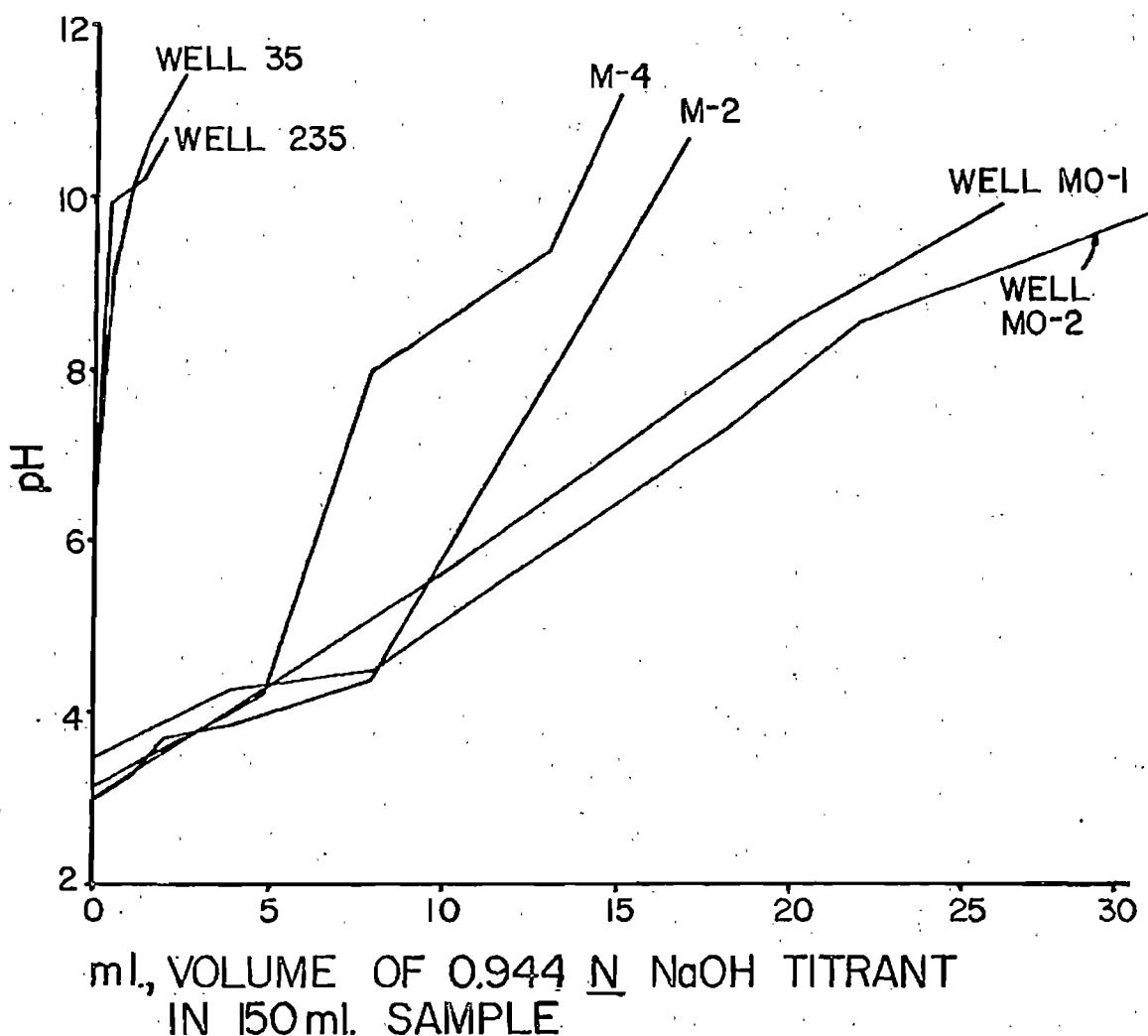


Figure 1. Results of sample titration, August 15, 1980.

PE.LaMoreaux & Associates

DRUM000538

PELA

5

$$\left(\frac{1 \text{ ml}}{\text{ml}} \right) (0.944 \text{ N}) \left(\frac{1 \text{ eq wt/l}}{1 \text{ N}} \right) (1000 \text{ meq/eq wt}) (l/1000 \text{ ml}) =$$

0.944 meq/ml of titrant

For a 150-ml sample size 1 ml titrant is:

$$0.944 \text{ meq in } 150 \text{ ml}$$

$$= \frac{0.944 \text{ meq}}{150 \text{ ml}} \times \frac{1000 \text{ ml}}{l}$$

$$= 6.29 \text{ meq/l}$$

The addition of 1 ml of 0.944 N titrant to 150 ml of sample is the addition of 6.29 meq of titrant/l

Molecular weight of sodium hydroxide

$$\text{NaOH} = 23 + 16 + 1 = 40$$

$$40 \text{ g NaOH} = 1 \text{ eq wt, } 40 \text{ mg NaOH} = 1 \text{ meq}$$

$$(6.29 \text{ meq/l}) (40 \text{ mg NaOH/l meq}) = 252 \text{ mg NaOH/l}$$

In the titration of 150-ml samples with 0.944 N base, the addition of 1 ml of titrant is equal to the addition of 252 mg/l of NaOH.

PELA

6

Present average mine dewatering rate =

#35 940 gpm for 8hr/day

#325 500 gpm for 7.5hr/day

(940 gal/min) (8hr/day) (60 min/hr)

= 451,200 gal/day

(500 gal/min) (7.5hr/day) (60 min/hr)

= 225,000 gal/day

Total: = 676,200 gal/day x (day/1440min)

= 470 gpm average rate

1. Volume of water in mine remaining when pumps have been operated to shut off:

Filled: (435 acres) (43560 ft²/acre) (4.5' avg. depth)

(0.5 water-filled void fraction)

= 42.63×10^6 ft³ = 318.9×10^6 gal = 2.65×10^9 lb H₂O

Partially filled:

(360 acres) (43560 ft²/acre) (4.5' avg. depth x 0.5 filled)

(0.5 water-filled void fraction)

= 17.64×10^6 ft³ = 131.96×10^6 gal = 1.1×10^9 lb H₂O.

Total = 3.75×10^9 lb H₂O

2. Present average mine dewatering rate =

Constant rate, continuous at 470 gpm = 676,200 gal/day

= 5.64×10^6 lb H₂O/day

3. Proposed inflow rate of waters high in oxidized sulfur concentration from valley fill into mine:

(140 acres) (52" rain/year) (43560 ft²/acre) (ft/12")

= 26.4×10^6 ft³/yr (62.4 lb/ft³) = 1.65×10^9 lb H₂O/yr

= 197.7×10^6 gal/yr

P.E. LaMoreaux & Associates

PELA

7

1. One-time treatment volume for existing water in the mine.

$$450.86 \times 10^6 \text{ gal} = 3.75 \times 10^9 \text{ lb H}_2\text{O}$$

2. Annual amount of dewatering pumpage from mine as it is being operated now:

$$0.676 \times 10^6 \text{ gal/day (365 days/yr)}$$

$$= 246.7 \times 10^6 \text{ gal/yr}$$

$$= 2.058 \times 10^9 \text{ lb H}_2\text{O/yr}$$

3. Annual amount of oxidized sulfur water from valley fill to mine.

$$197.7 \times 10^6 \text{ gal/yr} \quad \text{541,643 FD (376.76)}$$

$$= 1.65 \times 10^9 \text{ lb H}_2\text{O/yr}$$

From titration curves on figure 1. Worse case titrant volumes for mine dewatering waters and for oxidized sulfur waters for selected pH endpoints.

TITRANT VOLUMES

pH	Mine Dewatering Water (1&2)	Oxidized Sulfur Water (3)
8	0.3 ml	20 ml
9	0.5 ml	25 ml
10	1.0 ml	32 ml
<p>@\$200.00/ton of 50% NaOH*</p> <p>1000 lb NaOH Costs \$200.00</p> <p>100% NaOH Costs \$200.00/1000 = \$0.20/lb</p>		

*By phone 9/17/80 - Thompson-Hayward Chemical Company, Birmingham

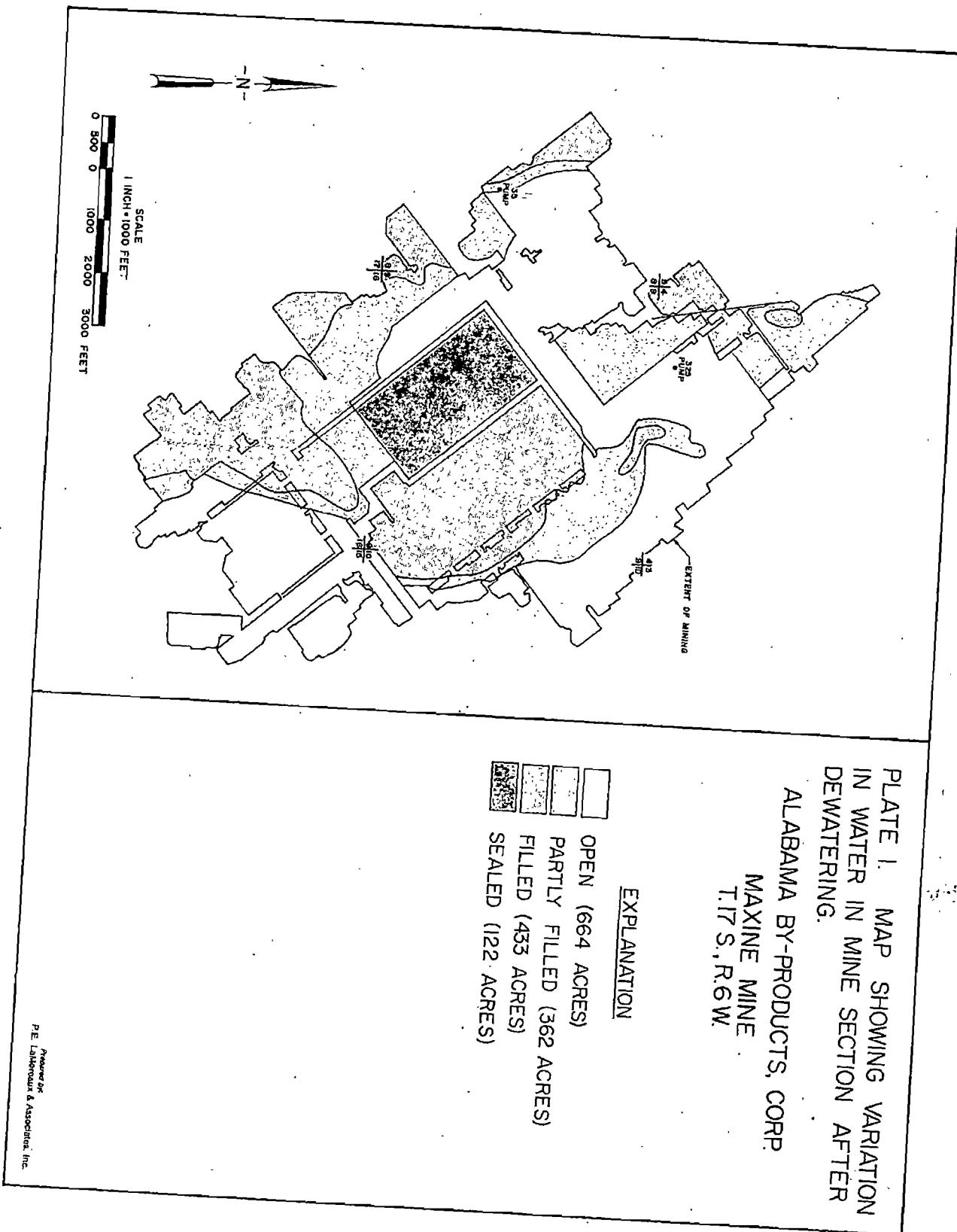
PMLA

8

1.	pH	8	9	10
	Titrant Volume	0.3 mL	0.5 mL	1.0 mL
	$\times 252 \text{ mg/l/mL titrant} = 75.6 \text{ mg/l}$	126 mg/l		252 mg/l 100% NaOH
	$(1\text{mg/l}=1\text{ppm}) \times 3.75 \times 10^9 \text{ lb H}_2\text{O} = 0.284 \times 10^6 \text{ lb}$	$0.473 \times 10^6 \text{ lb}$	$0.945 \times 10^6 \text{ lb}$	100% NaOH
	$\times \$0.20/\text{lb 100\% NaOH} = \$56,800$	$\$94,600$	$\$189,000$	
2.	$2.058 \times 10^9 \text{ lb H}_2\text{O/yr}$			
	pH	8	9	10
	Titrant Volume	0.3 mL	0.5 mL	1.0 mL
	$\times 252 \text{ mg/l/mL titrant} = 75.6 \text{ mg/l}$	126 mg/l		252 mg/l 100% NaOH
	$\times 2.058 \times 10^9 \text{ lb H}_2\text{O/yr} = 155,600 \text{ lb NaOH/yr}$	$259,300 \text{ lb NaOH/yr}$	$518,600 \text{ lb NaOH/yr}$	100% NaOH
	$\times \$0.20/\text{lb NaOH 100\%} =$	$\$31,120/\text{yr}$	$\$51,860/\text{yr}$	$\$103,700/\text{yr}$
		$\$ 85.26/\text{day}$	$\$142.08/\text{day}$	$\$284.11/\text{day}$
3.	$1.64 \times 10^9 \text{ lb H}_2\text{O/yr}$			
	pH	8	9	10
	Titrant Volume	20 mL	25 mL	32 mL
	$\times 252 \text{ mg/l/mL titrant} = 5,040 \text{ mg/l}$	6,300 mg/l		8,064 mg/l 100% NaOH
	$\times 1.65 \times 10^9 \text{ lb H}_2\text{O/yr} = 8.32 \times 10^6 \text{ lb NaOH/yr}$	$10.4 \times 10^6 \text{ lb NaOH/yr}$		$13.3 \times 10^6 \text{ lb NaOH/yr}$ 100% NaOH
	$\times \$0.20/\text{lb 100\% NaOH} =$	$\$1.66 \times 10^6/\text{yr}$	$\$2.08 \times 10^6/\text{yr}$	$\$2.66 \times 10^6/\text{yr}$
		$\$4,548.00/\text{day}$	$\$5,698.00/\text{day}$	$\$7,287.00/\text{day}$

P.E. LaMoreaux & Associates

Plate 1. Map showing
variation in water in mine
section after dewatering.



bc: Mr. Breland/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Brown
Mr. Gilbert
Mr. McDuff, Jack

June 9, 1980

Mr. Joe Meyers
Alabama Water Improvement Commission
Perry Hill Office Park
3815 Interstate Court
Montgomery, Alabama 36109

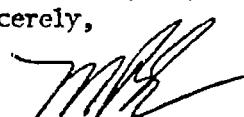
Dear Mr. Meyers:

In keeping with our discussion on June 3, 1980 in regards to the Maxine Mine acid water problem, I would submit the following.

We, as stated on prior occasions, would propose to treat this small body of water by spraying a lime kiln dust onto its surface, this would be done on a weekly basis (weather permitting) with pH readings being taken before and after each treatment. We would also propose that after determining the pH adjustment resulting from one treatment, to spray this area twice on the same day if necessary in an effort to provide a more effective temporary treatment until a permanent system can be installed.

It is anticipated that a similar treatment system to the one being installed at the Chetopa Mine will be duplicated at the Maxine area as soon as possible after the Chetopa installation has been stabilized. The waters from the Maxine treatment system would be piped to an abandoned portion of the Maxine Mine, these waters would have a large settling area and would then be discharged via NPDES discharge permitted deep well pump. We do not anticipate any water quality problems with the existing deep well pump discharge inasmuch as this added water would be treated prior to discharging underground.

Sincerely,



Moyer B. Edwards
Director Environmental Control

MBE:r1

bc: //
Mr. Breland/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Grover
Mr. Brown
Mr. Gilbert
Mr. McDuff, J.

March 6, 1980

Mr. Joe Meyers
Alabama Water Improvement Commission
Perry Hill Office Park
3815 Interstate Court
Montgomery, Alabama 36109

Dear Mr. Meyers:

Per agreement as made during the joint meeting between AWIC, ASMRC and Alabama By-Products Corporation relative to the treatment of acid waters at our Maxine Mine, we would submit the following.

As noted during this meeting, the ASMRC had issued a notice of violation which mandated temporary treatment by March 15. However, it is our understanding at this time that the ultimate responsibility for the waters of the State of Alabama rests with the Alabama Water Improvement Commission and henceforth all correspondence relative to this problem will be forwarded to your office.

As outlined during the meeting by Mr. LaMoreaux, his firm is and has been in the process of studying this area and obtaining test data in order to be in a position to recommend to ABC an acceptable approach to eliminate or correct this problem. Mr. LaMoreaux has indicated during his presentation that the hydrology studies should be continued until the end of the dry season of 1980.

In the meantime, as an interim measure, ABC is proposing as a first phase to obtain crushed limestone (3 inches or less) which will be placed on the upstream side of the lower retaining dyke. As a second phase, which could be carried out immediately or concurrently with the first phase, would be the obtaining of flue dust and/or rock dust which will be brought in by tank truck and the entire pond area sprayed with this material. In the meantime a hay filter dam will serve to filter out any floating material which may not immediately settle. In addition to the pond dusting, pH readings will be obtained at the outfall and the results will be retained in the Engineering Office of the Maxine Mine.

In addition to the above interim program, ABC is now investigating the following possibilities as a permanent solution, which system would be utilized

Mr. Meyers

- 2 -

March 6, 1980

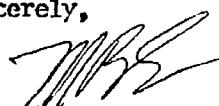
after the recommendations are made by Mr. LaMoreaux upon completion of his hydrology studies. Some possibilities are as follows:

1. Existing water in the last holding area would be treated and discharged to a sealed section of the Maxine Mine.
2. The renewal of the existing storage and increase the flow-through of those waters which would normally undergo long contact periods with refuse and hence become acidic.
3. Treatment of the sub-surface waters prior to getting to the small lower pond.
4. Fixing the water in the existing storage area and treat the flow-through only.
5. Diversion of the maximum amount of water found in the refuse areas and eliminate that portion for treatment.

As you are aware, we have designed and are receiving quotes on storage tanks for neutralizing material at another location. It is the intent of this Company to pursue the approach now being followed at another location in treating the waters at the Maxine Mine. We would hope that your agency would allow this Company ample time to evaluate this system in use prior to its installation into the area in question.

We trust this is in keeping with our conversation during the Jasper meeting and would request your consideration in the above matter. If there are any questions in regard to this, do not hesitate to contact me.

Sincerely,



Moyer B. Edwards
Director Environmental Control

MBE:r1

(1)

3/2/80 MS REC MMRP → Maxine

MMRP - Cranor, Smith, Robins
PBC - Cook, Duff, Brown, Edwards

Joe - full application oficide that it is
been determined the disease point
Heller - 200' - right in his room
confirms MMRP concurrence
only time not observed
Temporary abatement must be
"Stream" near residence must be addressed

Doug - notes expansion of treatment is well be
read to accommodate
Notes dual treated Maxine - Chappa
plan for same
as quickly as possible

John - doesn't want to rush on Maxine and all necessary steps
Vic - doesn't want problem going from one
abatement to another
get septi in 1st then
Doug can spray area in between

John - does not monitor work done

John - get copy of 59 vs 79 claim for my info

John - notes present treatment cosmetic only
may have to treat what we can't sell.

3/3/87: cont

(2)

Fallan - Engineers need to know what and how much must be treated.

Robin - How much lost to wire seepage?

LaRue - V. little due to SP

well installed in 1979 -

Lower part doesn't ~~wash~~ ^{real} as rapid. ~~to~~ ^{to}

Robin - How long for lots accumulates.

Baker - Spring rains + dry seasons

would expect in 20-30 days in treatment.

May want to try injection methods -

Cronin - Can divert H₂O?

La - Yes.

La - Est 18 x 10⁶ gal.

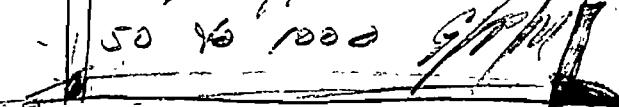
May parallel ~~the~~ - seal ~~seam~~ and ~~but~~ ~~not~~
~~parallel~~ ~~the~~ ~~seam~~ ~~but~~ ~~not~~
further ~~the~~ ~~seam~~ ~~but~~ ~~not~~

Cronin - put neg training to min

LaM. - Can punch bottom from walls -

Cronin - tops approach could be ~~corrosive~~

La - 50 to 1000



Joe - Would buy Co

ft of lean relative to 50 yr ~~flow~~

Joe - suggest saline system, CaCO₃

Heiber - " more sophisticated system

Joe - " keep it simple like "

Heiber - use these to be tied to pH monitoring

Joe - disturbed re live bottom

3/3/80

Cost - 8800 P.C. (3)

Joe - Check off log - 1/2 days

Crown - submit small attachments to V

Joe - Can we print off by 3/15/80

Crown - Can we switch off from here

Joe - Don't want cause track below 25 yr ^{max}

John - Take will - get rec

Heather - Noted & how often do we check off - ~~close~~

Ed - / day

Heather - Noted he had talked to Jack W. Duff who said we ran out of material

Ed - I am unaware of this I had lesser problems -

Joe - Monitoring the 49 P.D.S. schedule.

2/9/80 18MPC

Alternatives being considered

1. Discard 3, treat & reuse
2. Removal of exist. stop & increase flow through
3. Treatment (subgrade) prior to exiting & lower water
4. Fixing seepage on slope and treat flow through
5. Diversion to river

note letter re: problem

See - suggest control measures on up side of dam
1. fence - 2. filter cloth 3. spray panel

(3 copies to AWE)

11. Range until end of dry season & complete hydrology
studies -

Paul notes that Ken had visited AWE.

~~Report~~

Ken said they would soon establish
a company

R

7/28/80 Call to Joe Meyer - at home

re: Maxine, Divine damage
at 1800 D.C. mtg. on Monday -

Take as long - 7/29 graffiti

clause not addressed

Call Craig - friend as if none exist

X



**STATE OF ALABAMA
SURFACE MINING RECLAMATION COMMISSION**

P. O. BOX 2390 JASPER, AL 35501 — TEL. (205) 221-4130

*Maxine
P. o. off*

**VIRGIL WILLETT
DIRECTOR**

**THOMAS G. WALKER, JR.
ASST. DIRECTOR, ADMINISTRATION**

**JERRY T. MCLENDON
ASST. DIRECTOR, TECHNOLOGY**

**RONALD J. F. REEVES
ASST. ATTORNEY GENERAL**

February 4, 1980

Copy 2/8/80 from J.McDuff to:

Mr. Jack McDuff
Senior Civil Engineer
Alabama By-Products Corporation
P. O. Box 10246
Birmingham, Alabama 35202

Mr. Breland/Burdette
Mr. Cook
Mr. Brown
Mr. Edwards

Dear Mr. McDuff:

After consultation with our technical staff director and other members of the technical staff, we have decided on an extension date for the abatement of NOV 79-HVR-073 concerning the acid mine runoff problem at Maxine Mine. An extension date of June 19, 1980 will be given for permanent treatment in order for you to carry out the test necessary for treatment. However, in the interim time some temporary treatment will be necessary since this is too great a length of time to allow the water to flow untreated into the Locust Fork. The abatement date for this temporary treatment will be March 15, 1980. If you have any questions please contact me.

Sincerely,

Bruce S. Smith

Bruce S. Smith
Inspector for the State

BSS/db

STATE OF ALABAMA

SURFACE MINING RECLAMATION COMMISSION

Termination of Notice of Violation(s)

Notice of Violation No. 79-HVR-073

Company: Alabama By-Products County: Jefferson

Mine: Surface: _____ Underground: ✓

Permit No. Maxine Mine Today's Date: 2/4/80

Date of NOV: 7/5/79 Abatement Date: 1/19/80

Abatement Extended: New Abatement Date: See Comments

Abatement Unsatisfactory: _____

Abatement Satisfactory: Completely _____; Partially ✓ ;

Unabated Violations:

Item No. 1

Item No. _____

Item No. _____

Comments:

This NOV will require a two-part abatement. Temporary treatment of acid mine runoff, abatement date 3/15/80. Permanent treatment of acid mine runoff, abatement date 6/19/80.

Bruce S. Smith
Inspector

To: Gary WALKER

10-12-79

Subject: MAXINE REFUSE Pile H₂O sample

Gary,

Here are the results of the five(s) H₂O samples for the week 10-8-12-79.

	PH	Fe	M.N	T.S.S.	AIK.	Co
10-8-79	2.8	400	9.5	20.4	20ppm AS Acid	6
10-9-79	3.2	350	9.0	5.0	10ppm AS Acid	6
10-10-79	2.9	450	11.0	3.8	12.0 ppm AS Acid	6
10-11-79	2.0	550	14.0	.8	20 ppm AS Acid	70
10-12-79	2.6	600	8.0	1.0	20 ppm AS Acid	65

Gary Tockler
SEGCO LAB

PH READING ALONG BANK OF LOCUST FORK NEAR
DISCHARGE BELOW REFUSE PILE
10-4-79

PH

Behind Upper Dam	- 2.85
Below Dam	- 2.70
Behind Weir	- 2.90
20' Above Discharge	- 6.00
At Discharge	- 4.30
At Discharge	- 5.90
15' Out from Bank	- 6.15
At Discharge	- 3.10
15' Out from Bank	- 6.05
70' Downstream	- 6.10
100' Downstream	- 6.25
15' Out	- 6.45
300' Downstream 15' Out	- 6.50
Below Lime Filter	- 3.50

ASMRPC - Maxine
Violation

STATE OF ALABAMA

SURFACE MINING RECLAMATION COMMISSION

Termination of Notice of Violation(s)

Notice of Violation No. 79-HVR-073

Company: Alabama By-Products County: Jefferson

Mine: Surface: _____ Underground:

Permit No. Maxine Mine Today's Date: 3/25/80

Date of NOV: 7/5/79 Abatement Date: 3/15/80

Abatement Extended: New Abatement Date: _____

Abatement Unsatisfactory: _____

Abatement Satisfactory: Completely _____; Partially _____;

Unabated Violations:

Item No. _____

Item No. _____

Item No. _____

Comments:

This violation involves an effluent limitation violation and has been turned over to A.W.F.C. for action. NOV 79-HVR-073 is vacated by ASMRPC

Bruce S. Smith
Inspector

cc from JAB 10-9-79 to: Mr. Breland/Burdette
Mr. Cook
Mr. F. McDuff
Mr. Edwards

STATE OF ALABAMA

SURFACE MINING RECLAMATION COMMISSION

Termination of Notice of Violation(s)

Notice of Violation No. 79-HVR-073

Company: Alabama By-Products County: Jefferson

Mine: Surface: _____ Underground: _____

Permit No. maxine Mine Today's Date: 10/12/79

Date of NOV: 7/5/79 Abatement Date: 10/9/79

Abatement Extended: New Abatement Date: 11/9/79

Abatement Unsatisfactory: _____

Abatement Satisfactory: Completely _____; Partially _____;

Unabated Violations:

Item No. 1

Item No. _____

Item No. _____

Comments: Are still running tests to determine best course of action to abate acid mine drainage to Locust Fork from rock dump areas.

Bob Robin
Inspector



STATE OF ALABAMA
SURFACE MINING RECLAMATION COMMISSION

NOTICE OF VIOLATION

NOTICE OF VIOLATION NUMBER: 79-HMR-073	
ISSUED TO: Alumina Pro-Products	
LEGAL DESCRIPTION (IF NO PERMIT NO.)	
<i>Under construction</i>	
COUNTY: Jefferson	PERMIT NUMBER: Maxine
MAILING ADDRESS: Quinton, ALA.	
PHONE NUMBER: 436-3251	SUBCONTRACTOR:
NAME AND TITLE OF PERSON SERVED: Gary Walker - Eng.	

Under the authority of the Alabama Surface Mining Reclamation Act of 1975, as amended, the undersigned conducted an inspection of the above mine on 7/5/79 (date) and has found the violations of the Act, regulations, or permit conditions contained in the attachments to this form.

This notice shall remain in effect until it expires by the accomplishment of the required action, or until modified or vacated by the Director of the Commission.

IMPORTANT - PLEASE READ CAREFULLY

If the action indicated is not accomplished by the expiration date, a Citation for a hearing will be issued pursuant to Section XVI of the Act. This section provides for a civil penalty of up to Ten Thousand Dollars (\$ 10,000) and such other action as the Commission deems appropriate, including SUSPENSION or REVOCATION of the permit or license. For willfully and knowingly mining without a license and permit a CRIMINAL PENALTY of up to Ten Thousand Dollars (\$ 10,000) and up to one year imprisonment may be ordered for each day of violation.

Signature of Person Served: <i>Gary Walker</i>	Signature of State of Alabama Inspector: <i>Walt Robins</i>
For Office Use Only	
Inspector Abatement Date: <i>8/5/79</i>	

STATE OF ALABAMA
SURFACE MINING RECLAMATION COMMISSION

NOTICE OF VIOLATION (continued)

Notice of Violation No. 79-HMR-073

Violation(s) No. _____

Nature of the Violation(s):

Discharge from disturbed area not within effluent limitations.

Provision(s) of the Act, Regulations or Permit Violated:

Sec. 212(3)(a) (7)(2), (7)(a)

Remedial Action to Abate Violation:

Begin treatment immediately to lower iron and manganese levels, and raise pH of water leaving mine site into Locust Fork below active rock dump.

Date for Accomplishment of Remedial Action:

8/15/79

EDWARDS
CITY OFFICE

RECEIVED
DEC 13 1982
ENV. A. B. C.
CONTR.

12-2-82

TO: MR. TOM MUSICK /COOK
FROM: GARY WALKER
SUBJECT: ASMC INSPECTION AT MAXINE MINE ON NOVEMBER 30, 1982

Janice, Ryan, ASMC Inspector, was at Maxine Mine on Tuesday, November 30, 1982 for a routine inspection of the surface area of the mine. No violations were found during the inspection.

The first area observed was the breaker rock dump. Material is presently being placed on this dump in a manner preparing for the desired slope of final reclamation. All hay and limestone filters in this area were intact.

The next area observed was the sediment basin near the transfer house of the river belt. The water level in this pond was low enough that there was no discharge and the float switch had the pump cut off. Ms. Ryan's main concern at this point is the available storage volume due to the amount of solids in the pond. She stated that this should be watched closely.

The next area observed was the material yard. All berms and filters in this area were intact.

The next area observed was the washer rock dump. Material is also being placed in this area in a manner preparing for final reclamation.

The next area observed was the new rock dump site. Trees are presently being cleared from this site. Ms. Ryan stated that we needed to be sure to contact ASMC when construction for the dam at this site begins.

The last area observed was the area below the active washer rock dump. The diversion ditches in this area were intact. Plans for this area are included in the final reclamation plans.

cc: EDWARDS
BRYANT
EARL PIRESA

bc: Mr. Sheriff/Mr. Burdette
Mr. Cook/Mr. Musick
Mr. Gilbert
Mr. Walker

August 3, 1982

Mr. Charles Horn, Chief
Industrial Waste Section
Alabama Water Improvement Commission
Public Health Services Building
Montgomery, Alabama 36130

Dear Mr. Horn:

Attached is the supplement to the Surface Mining Permit Application for Maxine Mine and is for the new coal processing waste disposal area.

This is the area to which we would move the refuse disposal area upon closing the existing active areas.

Sincerely,


Moyer B. Edwards
Director Environmental Control

MBE:r1
Attachment

DRUM000618

ASMC Ins.

Alabama By-Products Corporation
Mary Lee No. 2 Mine

May 6, 1985

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on April 30, 1985

Preston Hayes, ASMC Inspector, was at Maxine Mine on Tuesday, April 30, 1985, for a routine inspection of the surface area reclamation at the mine site.

The first area observed was the barge loading site. There was no discharge from the pond near this area. The adjacent area that was disturbed by Bunt Construction has been graded and planted with grass. There were no problems in this area.

The next area observed was the area around the office, shop, supply house and preparation plant. Diversion ditches in this area and settled areas around the preparation plant site will probably require periodic repairs until the area is stabilized.

The next area observed was the reclaimed "post-law" refuse area. Mr. Hayes did not check the pond below this area. There were no problems in this area.

The last area observed was the new refuse disposal site. Mr. Hayes did not check the pond below this area. There were no problems in this area.

Mr. Hayes suggested that by applying for a grading release for most of the reclamation the bond amount could be reduced.

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

GW/fm

RECEIVED

cc: Mr. Sheriff Mr. J. McDuff
 Mr. Burdette Mr. F. McDuff
 Mr. Darden File
 Mr. Edwards ✓

MAY 10 1985

A. B. C.
ENV. CONTROL

Preston Hayes
Maxine Mine

Alabama By-Products Corporation
Mary Lee No. 2 Mine

April 2, 1985

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on March 27, 1985

Preston Hayes, ASMC Inspector, was at Maxine Mine on Wednesday, March 27, 1985, for a routine inspection of the surface area reclamation at the mine site. David Bowers of the Forestry Department accompanied us during the inspection.

The first area observed was the barge loading site. There was no discharge from the pond near this area.

The next area observed was the area around the office, shop, supply house and preparation plant. A diversion ditch has been constructed to control runoff from the rock belt into this area.

The next area observed was the reclaimed "post law" refuse area. Mr. Hayes did not check the pond below this area. The borrow pit adjacent to this area has been re-vegetated to cover bare areas.

The last area observed was the raw water reservoir site. This area has been grassed and planted with pine seedlings.

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

GW/fm

cc: Mr. Sheriff
Mr. Burdette
Mr. Darden
Mr. Edwards ✓
Mr. J. McDuff
Mr. F. McDuff
File

March 19, 1985

Mr. Thomas C. Whalen, Civil Engineer
Department of the Army
Water Resources Support Center,
Corps of Engineers
Casey Building
Fort Belvoir, Virginia 22060

Dear Mr. Whalen:

In regard to your request of March 4, 1985, this is to inform you that this Company no longer has berthing facilities on the Warrior River. The Maxline Mine has been closed for nearly two years.

Sincerely,


Moyer B. Edwards
Director, Environmental Control

MBE:rl

DRUM000675

cc: Mr. Sheriff
Mr. Burdette
Mr. Darden
Mr. Edwards
Mr. F. McDowell
Mr. J. McDowell
File

Home Seal
Atchison Co. Prosecutor
Gary Lee Lee, 2 Min

Maxwell
January 31, 1985

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on January 29, 1985:

Ted Wilkerson and Preston Hayes, ASMC Inspectors, were at Maxine Mine on Tuesday, January 29, 1985, for a routine inspection of the surface area reclamation at the mine site. Mr. Hayes will be the inspector for Maxine in the future. Mr. Wilkerson and Mr. Hayes checked the water discharge monitoring reports and the ground water monitoring reports for the mine.

The first area observed was the barge loading site. There was no discharge from the pond near this area. Mr. Wilkerson stated that the area used by Bunt Construction in cutting up and hauling the barge needed to be covered and vegetation established. I told Mr. Wilkerson that some of the area disturbed by Bunt Construction was not in the Maxine Permit.

The next area observed was the area around the office, shop, supply house and preparation plant. Mr. Wilkerson pointed out an area near the old office site where runoff from the rock belt has caused some erosion. He stated that hay bails should be placed in this area to control erosion.

The next area observed was the blackwater pond. There were no problems in this area.

The next area observed was the area around the old rock bin. There was some erosion in this area that should be watched closely in the future.

The next area observed was the reclaimed "post-law" refuse area and the sediment pond below this area. There was no discharge from this pond, and no problems in this area.

The last area observed was the new refuse disposal site and the pond below this area. There was no discharge from this pond. Mr. Wilkerson stated that the natural drainage course near the entrance to the rock dump site should be watched closely and measures to prevent further erosion should be taken if necessary (hay bails or rock).

Mr. Wilkerson suggested that trees could be planted on the breaker rock dump area, the "post-law" refuse area, and the new rock dump site and a Phase I release requested for these areas.

Respectfully,

Gary Walker
Gary Walker, Engineer
Gary Lee Lee, 2 Min

GW/Sm

DRUM000680

Maxine Mine

Alabama By-Products Corporation
Mary Lee No. 2 Mine

December 21, 1984

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on December 21, 1984

Ted Wilkerson, ASMC Inspector, was at Maxine Mine on Friday, December 21, 1984, for a routine inspection of the surface area reclamation at the mine site.

During his inspection, Mr. Wilkerson checked the barge loading site, the area around the office, shop, supply house, and the preparation plant, the reclaimed "post-law" refuse area, the reclaimed breaker rock dump, the blackwater pond, and the new refuse disposal site. There were no problems in these areas. Mr. Wilkerson did not check the discharge points since there has not been sufficient rainfall to create a discharge. He seemed to be very pleased with the vegetation on all reclaimed areas.

Respectfully,

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

GW/fm

cc: Mr. Sheriff
Mr. Burdette
Mr. J. McDuff
Mr. F. McDuff
Mr. Darden
Mr. Edwards
File

RECEIVED
DEC 27 1984
A. B. C.
ENV. CONTROL

ASMC Trof Maxine

December 11, 1984

To: Mr. Tom Musick
From: Jack McDuff
Subject: ASMC Inspection of Maxine Mine

On Thursday, November 22, 1984, I accompanied ASMC Inspector Ted Wilkerson on an inspection of Maxine Mine. Based upon this inspection, I am of the opinion that the following areas are potential problem areas:

1. The sump pond near the barge loading facility was not discharging, but there was evidence of recent discharge;
2. The inspector expressed concern as to why the water in the pond just below the old refuse area had such a high concentration of suspended solids. He stated that ABC should keep close watch on this pond;
3. The inspector also indicated that additional hay bales should be placed in several gullies now forming in the soil cover at the toe of the old refuse area; and
4. The inspector stated that hay bales should be placed in the now-forming drainage-way near the new refuse disposal area. I explained that it appeared to me to be the natural drainage course, but he said all he wanted the hay bales for was to slow down the water velocity in the drainage ditch.

pc: Engineering File

JIM DARDEN,
COULD DAVID BOWERS GIVE US SOME HELP
ON ITEMS 3 & 4?

THANKS

Tom

RECORDED
DEC 17 1984
RECORDED

Alabama By-Products Corporation
Mary Lee No. 2 Mine

October 17, 1985

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on October 16, 1985

Preston Hayes, ASMC Inspector, was at Maxine Mine on Wednesday, October 16, 1985, for a routine inspection of the surface area reclamation at the mine site.

The first area observed was the reclaimed "post-law" refuse area. There were no problems in this area.

The next area observed was the area around the office, shop, supply house and preparation plant site. Vegetation in this area was good with the exception of the area where repairs have been recently completed.

The next area observed was the barge loading site. There was no discharge from the pond near this area.

The last area observed was the new refuse disposal site. There were no problems in this area.

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

GW/fm

cc: Mr. Richardson
Mr. Darden
Mr. Edwards
Mr. J. McDuff
Mr. F. McDuff
File

RECEIVED
OCT 21 1985
MATERIALS
DIVISION

ENR CONTINUED

Alabama By-Products Corporation
Mary Lee No. 2 Mine

September 27, 1985.

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on September 25, 1985

Preston Hayes, ASMC Inspector, and Wayne Stanley, OSM Inspector, were at Maxine Mine on Wednesday, September 25, 1985 for a routine inspection of the surface area reclamation at the mine site.

The first area observed was the barge loading site. There was no discharge from the pond near the area.

The next area observed was the area around the office, shop, supply house and preparation plant site. Repairs have been made in the settled areas around the preparation plant site. There were no problems in this area.

The next area observed was the reclaimed "post-law" refuse area. Mr. Hayes explained the separation of "pre-law" and "post-law" drainage areas to Mr. Stanley. There were no problems in this area.

The last area observed was the blackwater pond. There were no problems in this area.

Mr. Hayes and Mr. Stanley both agreed that the vegetation on the reclaimed area was doing very well.

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

GW/fm

cc: Mr. Richardson
Mr. Darden
Mr. Edwards ✓
Mr. J. McDuff
Mr. F. McDuff
File

RECEIVED
OCT 3 1985
S. C.
W. CONTROL

*ADM
G.W.*

Alabama By-Products Corporation
Mary Lee No. 2 Mine

September 24, 1985

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ADEM Inspection at Maxine Mine on September 24, 1985

Kirk Kreamer, ADEM Inspector, was at Maxine Mine on Tuesday, September 24, 1985, for a routine inspection of the NPDES water discharge points at the mine. Drew Peak, EPA, was accompanying Mr. Kreamer during the inspection. The results of Mr. Kreamer's inspection were as follows:

DISCHARGE POINT	LOCATION	
001	Near Entrance Gate	Sample Collected
020	Pond at site of old river belt transfer house	No Discharge
023	Pond below new refuse disposal site	No Discharge
024	Pond below "Post-law" reclaimed area	No Discharge

An additional sample was also collected from the rock filter discharge near the river. The samples were to be taken to a lab for analysis. Mr. Kreamer also wanted to look at pond 023 in view of the recent request to remove this discharge point from the NPDES permit. Mr. Kreamer and Mr. Peak also looked at the Blackwater pond.

Gary Walker
Gary Walker, Engineer

Mary Lee No. 2 Mine

GW/fm

cc: Mr. Richardson
Mr. Edwards
Mr. Darden
Mr. J. McDuff
Mr. F. McDuff
File

RECEIVED
SEP 27 1985
A. B. C.
ENV. CONTROL

cc: Mr. Sheriff
Mr. Burdette
Mr. Cook
Mr. F. McDuff
Mr. Darden
Mr. Edwards
File

ASMC Grp

Alabama By-Products Corporation
Mary Lee No. 2 Mine

October 30, 1984

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on October 30, 1984

Ted Wilkerson, ASMC Inspector, was at Maxine Mine on Tuesday, October 30, 1984, for a routine inspection of the surface area reclamation at the mine site.

The first area observed was the area around the office, shop, supply house, and preparation plant. Grass is beginning to grow on these areas.

The next area observed was the reclaimed "post-law" refuse area and the sediment pond below this area. There was no discharge from the pond.

The next area observed was the sediment pond below the site of the old refuse bin. Grass is beginning to grow in this area.

The next area observed was the barge loading site. Grass is growing on this area. There was no discharge from the pond near this area.

The last area observed was the new refuse disposal site and the pond below this area. There was no discharge from this pond. Mr. Wilkerson stated that some hay bails might be placed in the natural drainage course near the entrance to the rock dump site.

Vegetation on the recently reclaimed areas appears to be growing very well after the recent rainfall. Also, the previously reclaimed areas have "greened-up" as a result of the rainfall.

Respectfully,

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

RECEIVED

NOV 1 1984

A. B. C.
ENV. CONTROL

GW/fm

cc: Mr. Sheriff
Mr. Burdette
Mr. Cook
Mr. Edwards ✓
Mr. Darden
File

ADEM *Byf. Maxine*
Alabama By-Products Corporation
Mary Lee No. 2 Mine

October 22, 1984

RECEIVED

OCT 24 1984

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ADEM Inspection at Maxine Mine on October 19, 1984:

A. B. C.
ENV. CONTROL

Curt Kramer, ADEM Inspector, was at Maxine Mine for a routine inspection of the NPDES water discharge points at the mine site on Friday, October 19, 1984. Mr. Kramer indicated that he also wanted to check the rock filter near the river below the "pre-law refuse" and the creek that is being treated with sodium hydroxide.

The first area observed was the pond at the site of the old river belt transfer house (NPDES Discharge No. 026). There was no discharge from this pond.

The next area observed was the pond below the "post-law" reclaimed area (NPDES Discharge No. 024). There was no discharge from this pond. Mr. Kramer checked the rock filter near the river below this area. There was no water standing behind the rock filter.

The next area observed was the pond below the new refuse disposal site (NPDES Discharge No. 023). There was no discharge from this pond.

The next area observed was the water discharge near the entrance gate to the mine (NPDES Discharge No. 001). Mr. Kramer collected a sample from this area. The pH was 7.7.

The last area observed was the creek that is being treated with sodium hydroxide. Mr. Kramer collected three (3) water samples along this creek. The first sample was collected at the culvert near the old railroad bridge at Coal Creek. The pH was approximately 8.1 with the treatment flow at a minimum. The second sample was collected in the stream just prior to treatment. The pH was 4.2. The third sample was collected at a seep from the blackwater dam. The pH of the seep was approximately 3.5.

Mr. Kramer carried all the samples with him for further analysis.

Mr. Kramer did not go to the blackwater pond because of reclamation work that had been done to the access to this area.

Respectfully,

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

DRUM000687

cc: Mr. Sheriff
Mr. Burdette
Mr. Cook
Mr. Fred McDuff
Mr. Darden
Mr. Edwards

Alabama By-Products Corp.
August 31, 1984

TO: Mr. Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on August 30, 1984.

Ted Wilkerson, ASMC Inspector, met with us at Maxine Mine for an inspection of the reclamation at the mine site. Mr. Wilkerson checked the ground water and surface water monitoring records and the certificate of insurance for Maxine Mine.

The first area observed was the area around the office, shop, supply house, and preparation plant. All buildings and structures have been graded, covered with topsoil in necessary areas, and covered with hydrated lime. There were no problems in this area.

The next area observed was the reclaimed "post law" refuse area. Repairs to eroded areas in the reclamation were completed in June. Mr. Wilkerson was going to check the pH of the water from the reclaimed area but there was no discharge from the pond (NPDES Discharge No. 024). Mr. Wilkerson expressed concern about the potential for erosion on the western side of the lower reclaimed slope. This area was repaired in June but should continue to be checked for erosion. Mr. Wilkerson suggested that a means of energy dissipation for the runoff in this area might be considered.

The next area observed was the reclaimed breaker rock dump. There were no problems in this area other than some remedial grassing that could be done to cover some bare areas.

The next area observed was the blackwater pond. There were no problems in this area.

The next area observed was the pond at the old transfer house of the river belt (NPDES Discharge No. 020) and the area toward the barge loading site. This pond has been cleaned recently and was not discharging. Mr. Wilkerson was informed that this pond would be maintained during revegetation and reclaimed after vegetation on the surrounding area is stabilized. There were no problems in this area.

The last area observed was the new refuse disposal site that was reclaimed last spring. Mr. Wilkerson was going to check the pH of the water from the pond below this area but there was no discharge from the pond (NPDES Discharge No. 023). There were no problems in this area other than some remedial grassing that could be done to cover a bare area near the entrance to the refuse area.

Gary Walker
Gary Walker, Engineer
Mary Lee No. 2 Mine

cc: Mr. Sheriff
Mr. Cook
Mr. Burdette
Mr. Darden
Mr. Edwards
Mr. C. Jones
Mr. F. McDuff
Mr. J. McDuff
Mr. G. Walker

July 2, 1984

Memo To: File
From: T. Musick
Subject: MAXINE MINE - ASMC INSPECTION

Today, I accompanied Janice Ryan and Ted Wilkerson on an inspection of subject mine. I was informed that Ted would be replacing Janice as the Maxine Inspector because Janice is leaving ASMC in early July.

I received the impression that this was not a detailed inspection but a visit to acquaint Ted with the Maxine property. No violations were observed and remedial action was recommended in only two areas.

The following areas were observed:

- A. Clean coal stockpile and barge loading facility
- B. Preparation Plant and shop
- C. Reclaimed "post law" refuse area where reclamation was completed last fall.

The two diversion ditches were observed along with the system of monitor wells. We walked down to the sediment basin serving the "good" water diversion ditch. There was no discharge but a sample of the water in the basin was checked for pH by using a chemical color test. The pH was estimated at 7.0.

We then walked down the hollow to the limestone filter dam at the river. An attempt was made to collect a sample of the discharge but it was impossible because the filter drain was operating properly and the water flow was inaccessible. They did collect a small sample from the reservoir above the filter drain and took the sample to their laboratory. It was noted the filter drain is becoming coated and water flow is becoming impeded.

- D. Reclaimed Breaker Rock disposal site.
- E. Black Water Pond
- F. New Prep Plant Refuse Disposal Site

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JUL 3 1984

A. B. C.
ENV. CONTROL

4/16/84 Copies from JWD to: Mr. Sheriff/Mr. Burdette

Mr. Cook/Mr. Musick

Mr. Walker, Gary

Mr. Bowers

Mr. Curt Jones/Mr. F. McDuf

Dr. Pettry

Looks like they changed their
minds again.

JWD

4/17/84 - Copy to: Mr. Edwards



TECHNICAL DIVISION

STATE OF ALABAMA
SURFACE MINING COMMISSION

P.O. BOX 2380 - JASPER, ALABAMA 35501
(205) 221-4130

April 11, 1984

Mr. James W. Darden
Manager of Land and Forestry
Alabama By-Products Corporation
P.O. Box 10246
Birmingham, Alabama 35202

RE: Reclamation Plans for Maxine Mine

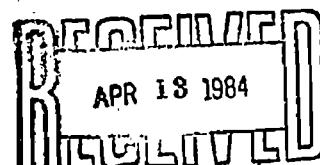
Dear Jim:

Your letter of March 28, 1984, contained supplemental materials relating to reclamation plan for Maxine Mine. These materials are, in many cases, at variance with the approved reclamation plan as well as with ASMC Rules. I wish to point out that the approved post-mining landuse for all areas is forestry (reference Part IV, Reclamation Plan, A-1).

Some of the proposed activities in your letter of March 28th are incompatible with the approved landuse, will result in a different landuse, or are inconsistent with ASMC Rules. In our last meeting concerning Maxine Mine, I pointed out that all reclamation activities on the site must be in accordance with the approved reclamation plan. Any changes to that plan must be approved by permit revision. For example, Item 7 of your letter dealing with a reservoir shown on Map Number 400 proposes leaving this pond as a wildlife area. This is incompatible with the approved post-mining landuse. The pond will have to be removed, regraded and revegetated with trees.

As an example of proposals inconsistent with the approved landuse, your letter proposed to leave large concrete structural foundations. Item 5, dealing with office and preparation plant site, mentions leaving above-ground concrete structures and concrete foundations. These are incompatible with the forestry landuse and must be removed or covered. We must also know where these materials are going to be disposed of and approval must be granted for disposal areas.

As example of proposals inconsistent with ASMC Regulations, we are aware that most of the active plant site, the barge loading facility, and stockpile areas are covered with coal, refuse and other potentially acid-forming materials. All of these materials, if toxic or acid-forming, must be covered, treated, or removed. Materials to be removed from the site must be identified and the disposal area approved. Areas to be covered or treated must be identified and chemical analysis supplied to ASMC along with plans for treating and covering the material. This will comprise virtually the entire office, washer, shop, barge loading facility areas and any other areas covered with coarse refuse or coal.



Reclamation Plans-Maxine Mine

Mr. James W. Darden

April 11, 1984

Page 2

With reference to the disposal area, Item 10 in your letter indicates that the area has been treated and covered with approximately 14 inches of material. This is at variance with ASMC Rule 10D-.50 which requires four feet of material unless appropriate demonstration can be made to indicate that less is required. No such demonstration has been made. In addition, we have data showing that the refuse disposed of at this site was approximately 29 tons per thousand tons deficient in calcium carbonate equivalent. Four tons of agri-lime per acre does not seem, or appear to be, sufficient neutralization. We will require a demonstration that neutralization has been successful. I might point out this is contrary to what Dr. Petrie told Malcom LeBron at the site. He indicated that calcium hydroxide had been used to neutralize the area. ABC must realize that we will not allow another problem refuse disposal area at Maxine Mine. It is also my understanding that the sediment control facility located below this refuse disposal area has a leaking dam. This must be corrected.

To summarize, the following must be supplied:

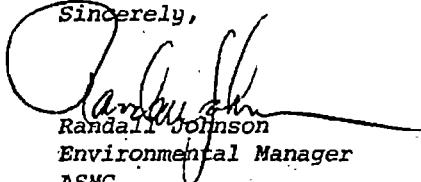
- 1) Revised plans indicating that all reclamation activities will be in accordance with the approved post-mining landuse, which is Forestry.
- 2) Chemical analyses of all surface areas covered with coal or coal refuse showing pyritic sulphur and neutralization potential.
- 3) Location of disposal sites and a disposal plan for all refuse and coal materials to be removed from the site.
- 4) Revised plans indicating removal of all concrete structures with the exception of MSHA seals.
- 5) Chemical analyses and compaction data on the refuse disposal area as previously outlined.

I might also point out that you have indicated in the past that you to not intend to cover any of the areas on which coarse refuse "redrock" is disposed, but rather to treat and plant as is. Your reclamation plan does not allow use of selected overburden materials in lieu of topsoil; therefore, these areas will require topsoiling. You are also reminded that you must achieve 80% ground cover of herbaceous vegetation as well as the required number of trees per acre. If the ground is covered with rock of certain size and coarseness, it may be physically impossible to achieve 80% ground cover of herbaceous vegetation, in which case, topsoiling of these areas is the only solution.

Reclamation Plans-Mzxine Mine
Mr. James W. Darden
April 11, 1984
Page 3

If you have any questions concerning these requirements, please feel free
to contact me.

Sincerely,



Randall Johnson
Environmental Manager
ASMC
Technical Division

RJ/C

Alabama By-Products Corporation
Maxine Mine

December 5, 1983

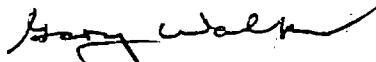
TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on December 1, 1983:

Janice Ryan, ASMC Inspector, was at Maxine Mine on Thursday December 1, 1983, for a routine inspection of the surface facilities at the mine. Sam Gilbert accompanied Ms. Ryan during the inspection. No violations were found.

The area looked at by Ms. Ryan during the inspection was the reclamation of the old washer refuse disposal site. The reclaimed area is now covered with a good stand of grass. Ms. Ryan checked the water discharging from the #3 pond at this site with a pH color indicator. The pH of the water was about 6.0 according to Ms. Ryan. The #2 dam in this area has recently been grassed and mulched by the forestry department. Ms. Ryan stated that the downstream face of the dam near the spillway needed a little more seeding and hay mulch to prevent erosion. Water was also backed up at the #1 dam near the river but was still flowing through the rock filter. There were no other problems in this area.

Ms. Ryan also asked Mr. Gilbert about ground water monitor well analyses. He informed Ms. Ryan that she could obtain that information by contacting me.

Respectfully,


Gary Walker, Engineer

GW/fm

cc: Mr. Sheriff/Mr. Burdette
Mr. McAlpin
Mr. Gilbert
Mr. Cook
Mr. J. McDuff
Mr. F. McDuff
Mr. Edwards
File

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DEC 14 1983

A. B. C.
ENV. CONTROL

August 19, 1983

Mr. Virgil Willett
Alabama Surface Mining Commission
Post Office Box 2398
Jasper, Alabama 35501

Re: Maxine Mine Closure

Dear Sir:

Persuant to Section 817.131 Part (c) of the Surface Mine Regulations, you are hereby notified that Maxine Mine will cease coal mining operations at the end of the second shift (11:00 P.M.) on Thursday, September 15, 1983. Mining activity, the processing of raw coal produced on and prior to September 15, will continue for a period of approximately 30 days after production has ceased.

Surface equipment, structures and other facilities not required for continued underground mining activities and monitoring will be removed and the affected lands reclaimed according to the approved Maxine Permit after the underground equipment and facilities have been recovered.

If you should require additional information relative to the mine closure please feel free to call at any time.

Yours very truly


W. R. Cook

DRC:cc

bc: Mr. Lewis
Mr. Self
Mr. Sheriff/Mr. Burdette
Mr. Musick
Mr. Bradford
Mr. Edwards
Mr. Gilbert
Mr. Walker
Mr. J. McDuff

RECEIVED

AUG 22 1983

A. B. C.
ENV. CONTROL

cc: Mr. Sherirr/Burdaette
Mr. Cook
Mr. Bryant
Mr. Gilbert
Mr. Edwards
Mr. Fred McDuff
Mr. Jack McDuff
File

Maxine Mine

June 7, 1983

TO: Mr. Tom Musick
FROM: Ronnie Key
SUBJECT:ASMC Inspection at Maxine Mine on June 6, 1983

Janice Ryan and Anita Kelley, ASMC inspectors were at Maxine Mine on Monday June 6, 1983 to check area below abandon washer refuse pile.

The first area observed was the dam at the river. Photographs were taken of area upstream and downstream of the dam including the limestone filter. One water sample from diversion ditch on the downstream side of road.

The next area observed was the #2 dam site. Photographs were taken in this area also.

cc: Mr. Sheriff/Mr. Burdette
Mr. Cook
Mr. Bryant
Mr. Gilbert
Mr. Edwards
Mr. Fred McDuff
Mr. Jack McDuff
File

Maxine Mine
June 3, 1983

TO: Mr. Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on June 3, 1983

Janice Ryan, ASMC Inspector, and Randy Johnson from the ASMC Jasper Office, were at Maxine Mine on Friday, June 3, 1983 to check progress of the old refuse reclamation at the mine. Mr. Johnson took photographs of all areas observed.

The first area observed was the breaker rock dump. Hydro-seeding in this area was near completion at the time of the inspection. Ms. Ryan recommended that the limestone filters below this area be maintained until vegetation is established.

The next area observed was the old washer refuse disposal area. Henderson Excavating was working on this area at the time of inspection.

The next area observed was the third pond from the river. This pond was being cleaned with a front end loader at the time of inspection.

The next area observed was the second pond from the river. The dam for this pond was being raised at the time of inspection. The spillway and diversion ditches in the vicinity of this pond have been re-established.

The next area observed was the pond next to the river. The limestone filter in this dam had been partially dug out with a front end loader to unclog the filter. New limestone was being hauled in at the time of inspection.

The last area observed was the diversion ditch on the left side (looking upstream) of the pond next to the river. Low pH waster appears to be seeping into this ditch through the ground from below the second dam.

Ms. Ryan collected water samples from this ditch and from the limestone filter next to the river.

CC: Mr. Sheriff/Mr. Burdette
Mr. Cook
Mr. Bryant
Mr. Gilbert
Mr. Edwards
Mr. Fred McDuff
Mr. Jack McDuff
File

Maxine Mine
May 31, 1983

TO: Mr. Tom Musick
FROM: Gary Walker
SUBJECT: ASMC Inspection at Maxine Mine on 5-27-83

Janice Ryan, ASMC Inspector, was at Maxine Mine on Friday, May 27, 1983, to inspect the old refuse reclamation at the mine. She was accompanied by Robert Allen from the ASMC Jasper Office. No violations were issued.

The first area observed was the old breaker rock dump. This area has been completely capped. Lime and materials for hydro seeding have been ordered.

The next area observed was the old washer refuse disposal area. Henderson Excavating was hauling clay for covering this area.

The last area observed was the ponds and ditches below the washer refuse area. The ponds were full and the ditches showed some signs of erosion as a result of recent heavy rains. Plans have been made to raise the dam on the second pond from the river and re-establish the ditches in this area. The third pond from the river will be cleaned as part of the reclamation project. Ms. Ryan did not look at the pond next to the river on this visit.

MEMORANDUM

Copy 8/4/80 from DRC to:

Mr. Breland/Burdette

Mr. Edwards

Mr. Musick

Mr. Darden

Mr. Brown

TO: For the Record

FROM: Lois A. Dildine

SUBJECT: Maxine Rock Storage Area Project (408301)

DATE: July 30, 1980

PROJECT SYNOPSIS

1. Sediments derived from washer rock storage area have been deposited in the valley creating an aquifer which contains water of poor quality.
2. Valley is underlain primarily by a thick shale unit.
3. The dam constructed across an embayment of the Locust Fork creates a head on the system.
4. Ground-water monitoring wells MO-1 and MO-2 and surface water monitoring sites M-1, M-2, M-3, and M-4 were established. Water quality and flow are monitored bi-monthly. Ground-water level fluctuations are recorded by Stevens Type-F water level recorders.
5. The water in the system is Magnesium-sulfate water in chemical character with high concentrations of iron and manganese. Also, total dissolved solids, comprised primarily of sulfate, are excessively high.
6. The volume of valley fill material, based on 1959 and 1979 topography is estimated at 215,200 cubic yards. Natural stream deposits may add to the volume of permeable material in the valley.
7. Using high and low ground-water levels recorded, the estimated volume of fill material and assuming a porosity of 25%, the volume of water in the aquifer is estimated to vary from 6 to 10.5 million gallons.
8. The drainage area for the system is approximately 180 acres. Assuming annual precipitation of 4.3 feet (52 inches) = 774 acre feet or 252,250,000 gallons per year (480 gallons per minute).
9. The alternative presently under consideration for the abatement of the surface/ground water quality problem is treating and discharging of water into the mine.

- 2 -

Advantages: 1. More uniform rate of disposal.
2. Sludge will settle out in mine.
3. Possible to "clean up" lower pond area.
4. Efficient means of mixing water with treatment material.

SYSTEM DESIGN DETAILS UNDER CONSIDERATION:

1. Surface storage pond with disposal well.
2. Dam site and construction alternatives.
3. Well location.
4. Well to be constructed to prevent sediments from clogging system.
5. Discharge rate and well diameter.
6. Treatment material and dosage.
7. Capacity of present mine dewatering system.
8. Mine water level fluctuation units.
9. Water quality of mine water and mixing with discharge from system.

Moye and Hill, P.C.

ALABAMA WATER IMPROVEMENT COMMISSION

Mailing Address:
State Office Building
Montgomery, AL 36130
Telephone (AC 205) 277-3630

Office Location:
Perry Hill Office Park
3815 Interstate Court
Montgomery, AL

Date: July 14

TO: Moyer, Edwards

FROM: Charles Hines

SUBJECT: _____

Per Your Request Comment

For Your Information Handle

For Your Files Circulate

Per Our Conversation Approval

Note and Return Signature

Prepare Reply See Me At Your Convenience

For Your Review

Other

Moyer

1.) Enclosed is a list of Joe, he does not handle disposal of acid from oil wells an abandoned
AWIC-RS-77 deep mine is consistent with our program.
2.) Attached are current guidelines I believe would
be applicable to stockpiles
3.) Enclosed is copy of RERA guidelines for
extraction tests

Paul 7-30-79

cc: Mr. Breland
Mr. Cook/Musick
Mr. Burdette
Mr. Edwards ✓
Mr. Brown

Maxine

December 20, 1978

Follow Up Inspection Report

Maxine Mine

DATE: December 14, 1978

PRESENT: Mr. Gilbert, Mr. Byce and Mr. J. McDuff

After re-evaluation of each of the areas which had been surveyed, it was found that sufficient runoff control exists to meet the requirements of the interim surface mining regulations with the exception of the Coal Stockpile Area.

Mr. Gilbert, Mr. Byce and myself walked the stockpile area and reviewed what needed to be done. Mr. Byce stated that he would undertake to correct the problem by putting up a berm as necessary. (Note: I talked with Mr. Gilbert today, December 20, 1978, and he stated that the berm was under construction. It is being made out of spoil material and will be "capped" with earth material).

With the correction of this problem, Maxine Mine should be in reasonably good condition as far as runoff control is concerned.

Jack McDuff

JLMc/ba

PROPOSED PLAN TO CORRECT THE SILTATION
PROBLEM ASSOCIATED WITH THE MAXINE MINE
REFUSE STORAGE AREA

Discussions related to the overall drainage and siltation from the refuse dump at Maxine Mine have lead to the following proposed plan.

A small dam approximately 20 feet high would be constructed in the main hollow south of the mine refuse area "A". This dam would not be designed to impound water but for containing the silt which would wash from the refuse area until the final stages were completed. The area east of this dam, which is now filled with silt washed from the refuse area, would be dredged and cleaned for a distance of approximately 1,000 feet. This material would be placed on the upstream of the north side of the dam.

A possible plan for the river side of this refuse area is to fill in the existing washed areas with clay, moderate the existing refuse slope from the tree line up to the road bed. A cover of clay will then be put down with subsequent seeding with grass and/or trees.

A ditch line of approximately 10 to 12 feet wide and approximately 3 feet deep located on the west side of the refuse pile would commence at the present access road which crosses the refuse pile and runs for a distance of approximately 5,800 feet meandering with the contours along the west side of the hollow below the refuse pile and ending in a hollow south of the proposed dam. This ditch would collect all drainage from the terrain west of the refuse area and carry it to a point south of our proposed dam. This water would not touch our refuse pile and should therefore be pollution free.

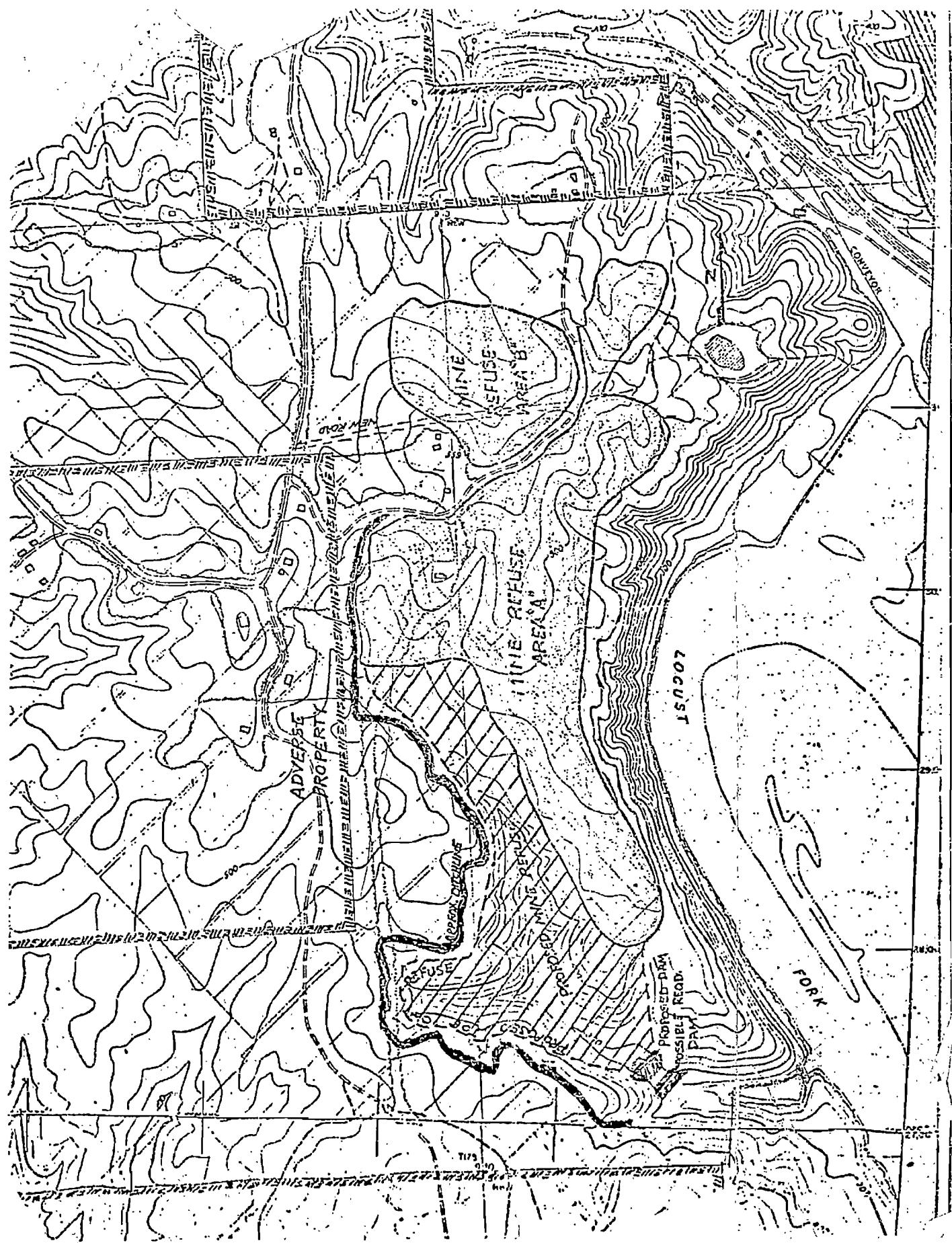
The large hollow to the southwest of the present refuse dump would be used for future mine refuse dumping. The refuse would be deposited from the bottom of the hollow and layered according to the law to approximately the proposed toe of refuse as shown on the attached sketch. The future refuse would be deposited on a slope from the top of the existing pile to the proposed toe and would measure approximately 27 degrees. This hollow would comprise three and one-quarter million cubic yards of dumping space. As the slopes for this area are completed, the top of the refuse pile would be covered with clay and seeded with grass and/or trees. Clay for this project is a scarce item and it may be necessary that some land south and west of the project would have to be acquired in order to obtain the necessary amount of clay. After removal of the clay, those areas too would be seeded with grass and/or trees.

We have already contacted an excavating company in order that we may be in a position to move forward on this project as soon as it meets with your approval.

ALABAMA BY-PRODUCTS CORPORATION

By:

Douglas B. Cook
Vice President Engineering-Mines



DRUM000771

cc: Mr. Breland
Mr. Burdette
Mr. Brown
Mr. Gilbert
Mr. Cook
Mr. Edwards

Maxine

June 2, 1978

Dear Mr. MusicK

On Tuesday, May 30, 1978, Jerry McClendon and Gene McKibbons representing the State of Alabama Surface Mining Reclamation commission conducted an on site inspection at Maxine Mine. Their primary concern was to look at the facilities which are affected by the provisions of the Surface Mining Control and Reclamation Act of 1977.

The first area inspected was the sediment basin which collects water from the raw coal and clean coal stockpiles. The next area inspected was the refuse near the blackwater pond and the problem with the acid water stream below the dam. We are currently treating the water with sodium hydroxide. The last area inspected was the drainage and sedimentation behind Refuse Pile No. 4 on top of the hill near the rock bin.

Mr. McClendon seemed to be most concerned with the acid water below the dam and behind the refuse pile. Mr. McClendon stated that the purpose of the inspection was to review the facilities at Maxine Mine and attempt to resolve any problem areas that might exist.

Sincerely,

Gary Walker

Gary Walker

November 17, 1977

Memorandum to: Mr. Moyer Edwards
Subject: **EPA Inspection At Maxine Mine**

EPA - Michael Taimi
Linda Anderson

AWIC - Joe Myers

ABC - Tom Musick
Sam Gilbert
Gary Walker

Michael Taimi and Linda Anderson of EPA, accompanied by Joe Myers of AWIC, were at Maxine Mine for inspection on November 2, 1977. Areas at which the representatives looked were the reclamation and siltation control on the refuse pile, the dike at the river behind the refuse pile, and the wet coal storage area settling basin. Mr. Myers explained to the EPA representatives the previous conditions and current action being taken by ABC concerning these conditions at each location. The EPA representatives also asked questions concerning the number of silt basins and outfalls located at the mine.

Gary Walker
Gary Walker
Engineer - Maxine Mine

cc: Mr. Koenig
Mr. Jones
Mr. R. W. Self
Mr. Lewis
Mr. Withers
Mr. W. E. Self
Mr. Breland
Mr. Cook/Mr. Musick
Mr. Gioiello
Mr. Brown

Mr. McAlpin
Mr. Gilbert/Mr. Millican
Mr. Stockman/Mr. Wynn
Mr. Stuckey/Mr. Russell
Mr. Bradford

Coke Plant Wastewater
Crossley Mine
Water P.O.
Maxine

June 27, 1977

MEMO TO FILE:

On Friday, June 24, 1977, I met with Messrs. Horn, Cox and Myers of the AWIC Technical Staff relative to our water pollution abatement program.

I talked with Mr. Myers in regard to the Maxine problem, i.e., the small stream flowing behind the washer and the resultant precipitate that is being encountered when treated. I also informed Mr. Myers that we had just had a heavy rain Thursday evening and the weir had washed quite a ways down stream. Mr. Myers felt that we were doing as much at this point as we could and that we should possibly continue to try to achieve a pH level where the precipitate would be minimal yet with a fair degree of neutralization if possible.

I talked with Mr. Horn and Mr. Bryant also in regard to the coke plant waste treatment facility and informed them that electrical workers were still on strike and that waste treatment plant was proceeding except for electrical. Mr. Horn informed me that he had talked with the EPA just this past week relative to our coke plant treatment facility. He had informed the EPA that we were a little behind schedule due to the problems just mentioned. At this time there seems to be no problem insofar as EPA is concerned. They mentioned to Mr. Horn the possibility of issuing a 90 day extension for this plant if necessary. Mr. Horn also mentioned that EPA might possibly be issuing a revised permit for our coke plant effluent in the near future.

These men appear to be satisfied with the progress that this company is making toward water pollution control at our coke plant as well as our mines.

Mr. Myers indicated that he had been to Maxine Mine recently and that he was impressed with the work that Mr. Gilbert has performed in that area.

MOYER B. EDWARDS

MBE:rl

DRUM000780

bcc: Mr. Breland/Burdette
Mr. Musick
Mr. J. McDuff
Mr. Edwards
Mr. Brown
Mr. Gilbert

Maxine

August 13, 1979

Mr. Joe Myers
Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36104

Dear Joe,

Attached are copies of the correspondence sent to Herb Robins, ASMRC, in regard to the acid-water problem at our Maxine Mine. This information is sent to you to keep you apprised of what steps are being taken to correct the problem of acid-water drainage below our coal processing waste disposal area.

If you need additional information, please call.

Sincerely yours,

D. R. Cook

D. R. Cook
Vice President Engineering-Mines

DRC/ba
Att:

bcc: Mr. Breland/Burdette - with copy of LaMoreaux letter
Mr. Musick - Ditto
Mr. J. McDuff - Ditto
Mr. Edwards - Ditto
Mr. Brown - Ditto
Mr. Gilbert - Ditto

August 13, 1979

Mr. Herb Robins
Alabama Surface Mining Reclamation Commission
Post Office Box 2390
Jasper, Alabama 35501

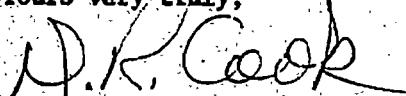
Dear Herb:

Attached is a copy of the correspondence sent to us by P.E. LaMoreaux of P. E. LaMoreaux and Associates, who has been retained by Alabama By-Products Corporation as consultant for surface and groundwater hydrology for our mining operations. Dr. LaMoreaux visited the Marline Mine on August 6, 1979, and was of the opinion that the acid-water problem existing at the mine coal processing waste disposal area was considerably more involved than just surface runoff. He indicates that additional time will be required to effectively solve the problem.

As indicated in the attached correspondence, certain steps will be taken by him to develop a solution. Information necessary for him to begin his investigation has been provided and arrangements are underway to assist him in the other areas.

We appreciate your assistance in this matter, especially in realizing the complexity of the problem and the need for a proper solution. If we can give you any additional information, please call.

Yours very truly,


D. R. Cook
Vice President Engineering-Mines

DRC/ba
Att:

P.E. LaMoreaux & Associates
Consulting Hydrologists, Geologists & Environmental Scientists

August 6, 1979

Mr. Doug Cook, Vice President
Alabama By Products
Engineering-Mines
P.O. Box 10246
Birmingham, AL 35202

RE: Maxine Mine - Rock Storage-Discharge Problem

Dear Doug:

On August 6, 1979 a visit was made to the Maxine Mine of ABC and in the company of Mr. Jack McDuff, Mr. Sam Gilbert, and Lois Dildine, a careful review was made of the notice of violation issued by the State of Alabama Surface Mining Reclamation Commission signed by Mr. Herb Robbins and received by Mr. Gary Walker of ABC on July 5, 1979.

Specific attention was made to the Rock Storage Area and the total catchment basin related thereto. Discharges through the basin and from the basin were observed and the specific violation "discharge from disturbed areas not within effluent limitations" specifically related to the provisions of the Act, Section 5-23A and 717.17A were inspected along with the treatment undertaken to date to remedy the violation.

Maxine Mine was started in 1953 and the rock waste accumulation since that date constitutes a very large volume of material. The rock material constituting in great part an unconsolidated volume of rubble is now acting as a catchment area for recharge to a perched ground water reservoir system. Water moves from the rock waste disposal area, both as surface water and an underground component of flow. The two sources of water have quite different volumes throughout the year and different quality characteristics. The specific area in violation is a tributary to the Locust Fork, which has in part been filled in with rock disposal material. The discharge point from this tributary is located

Home Office: P.O. Box 2310 Tuscaloosa, Alabama 35401 Telephone 205/752-3384 Cable (PELA)

Offices: 4313 South Florida Avenue Lakeland, Florida 33803 Telephone 813/646-8526
1440 Bank For Savings Building Birmingham, Alabama 35203 Telephone 205/251-5283

DRUM000793

Mr. Doug Cook
August 6, 1979
Page Two

so that throughout the year there is surface water, ground-water effluent or leachate moving through the rock pile rubble, and a possible component through jointing and bedding planes in the underlying bedrock sandstones and shales.

To effectively solve the problem and develop an adequate and efficient remedial treatment process for it will require the following:

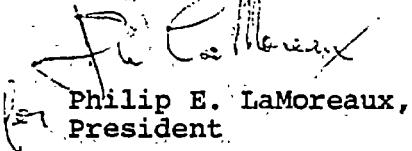
Work Elements

1. Air photo analysis to determine previous and existing drainage and interpret dip, strike, joint, pattern.
2. Surface geology analysis for ground truth of dip, strike, joint orientation, and lithologic units involved.
3. Subsurface geologic information for correlation with surface geology.
4. Original topographic map for determination of original drainage prior to 1953.
5. New topographic base for determination of re-established drainage.
6. Inventory of area to locate and describe all effluent, groundwater/surface water discharge points.
7. Collect samples of discharge and determine quantity of discharge. Run chemical analysis for pH, iron, manganese, total dissolved solids, etc.
8. Drill two core tests into the base of the rock disposal fill in the tributary and into the bedrock below to determine difference in hydrostatic head.
9. Determine location and extent of underground mines in area for possible exchange of water.

Mr. Doug Cook
August 6, 1979
Page Three

10. Determine impoundment required to meet ten (10) year, 24-hour event and develop necessary type and size of treatment facilities to control effluent at or below maximum allowable standards.
11. Prepare a summary report with necessary text, data, and recommendations.

Sincerely,



Philip E. LaMoreaux,
President

PEL:jt

cc: Mr. Jack McDuff

STATE OF ALABAMA
WATER IMPROVEMENT COMMISSION

Ira L. Myers, M. D.
Chairman State Health Officer

Claude D. Kelley
Vice Chairman
Commissioner, Department of
Conservation and Natural Resources

Perry Hill Office Park
3815 Interstate Court
Montgomery, Alabama



James W. Warr
Chief Administrative Officer

Commission Members:
Marvin O. Bergin, Fairhope
Dr. Robert M. Bushell, Mobile
Charles O. Clegg, Hueytown
Louis Grabenstetter, Huntsville
David L. Thomas, Montevallo

Mailing address:
State Office Building
Montgomery, AL 36130

Telephone 205/277-3830

April 5, 1977

Mr. Moyer Edwards
Director, Environmental Control
Alabama By-Products Corporation
Post Office Box 10246
Birmingham, AL 35202

Dear Mr. Edwards:

This letter is to confirm your agreement on March 23, 1977 with Mr. Cox to meet in our offices to discuss various corrective actions which Alabama By-Products must take to improve operation of water pollution abatement and/or prevention facilities at the Mary Lee No. 1, Maxine and SECCO No. 1 mines. At this time compliance schedules for necessary actions will also be discussed.

Pending your concurrence, we have tentatively scheduled this meeting for 10:30 a.m., on April 18, 1977.

Should you have any questions concerning this matter, please contact Mr. Buddy Cox of this office.

Yours very truly,

Charles R. Horn

Charles R. Horn, Chief
Industrial Waste Control Section
Water Improvement Commission

CRH:bjp

4/7/77 Copies from MBE to:

Mr. Koenig	Mr. Cook/Mr. Musick
Mr. Jones	Mr. McAlpin
Mr. R. W. Self	Mr. Brown
Mr. Lewis	Mr. Stuckey
Mr. W. E. Self	Mr. Stockman
Mr. Breland	Mr. Gilbert

Maxine

*Kongas
Mazene
Sego*

cc: Mr. Breland
Mr. Edwards

March 28, 1977

MR. W. E. SELF:

I am concerned that the State water pollution people are finding many of the problem areas at several of our mining operations uncorrected that they had called our attention to in various earlier inspections. Will you please take the necessary steps to make certain our water treatment efforts receive adequate attention on a regular and continuing basis in order that we may avoid any further unfavorable reaction from the water quality agencies?

G. W. LEWIS

GWL/bx

cc: D. R. Cook
Mr. Edwards ✓

Maxine Mine

June 3, 1976

TO: Tom Musick
FROM: David Millican
SUBJECT: Joe Myers of Alabama Water Improvement Commission
inspection of Maxine.

Mr. Myers came out to check on our progress in eliminating the problem areas he pointed out at an earlier visit. He inspected our river barge loading area and was well pleased with our efforts to eliminate the pollution in this area. Mr. Myers also inspected our erosion control efforts on our spoil piles and was satisfied with our progress. This visit was on May 20, 1976.

Respectfully,

David Millican
David Millican
Engineer, Maxine Mine